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THE
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AND

DISEASES OF WOMEN AND CHILDREN

EDITED BY

BROOKS H. WELLS, M.D.

*Professor of Gynecology at the New York Polyclinic; Fellow of the American
Gynecological Society, the New York Academy of Medicine, the New York
Obstetrical Society, the Society of the Alumni of the City Hospital, etc.*

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No. 1.

ORIGINAL COMMUNICATIONS.

TARNIER'S PRINCIPLE OF FORCEPS ROTATION IN OCCIPITO-
POSTERIOR POSITIONS.¹

BY

W. REYNOLDS WILSON, M.D.,
Philadelphia.

(With two illustrations.)

BEFORE entering upon the discussion of artificial rotation it may be well to define what is understood in the present connection by the term "occipito-posterior position." The mere engagement of the head at the inlet with the occiput posterior belongs to the initial stage of labor. It foretells little of the future of labor and is usually only a temporary position. On the other hand the fixation of the head in the cavity of the pelvis with the occiput directed toward one or the other of the iliac joints means a condition of arrested labor which requires the application of forceps under circumstances which usually make it impossible to accomplish delivery favorably without artificial rotation. It is the latter condition to which we shall refer in the following remarks.

In the first place, is there a possibility of so applying the forceps in this position as to fully control the rotation of the head?

¹Read before the Gynecological Section of the College of Physicians, October 15, 1903.

Theoretically the ideal application of the forceps is that with the blades applied to the sides of the head and with the concave borders directed toward the occiput. This latter condition permits flexion to take place within the grasp of the instrument and establishes a parallelism between the longitudinal axis of the head and the long axis of the blades. There is, however, in reality, no such symmetrical application of the forceps in posterior positions, whether they be right or left; in other words, it is impossible to properly apply the forceps in this position to opposite lateral regions of the head, at the same time grasping the head so that the concave borders of the blades are directed toward the occiput. The writer is aware that this assertion is in opposition to those who teach the application of the blades in reversed position, a maneuver, which, in comparison to other methods, is unscientific, as well as to those French writers who teach that the posterior deflection of the occiput is but a temporary stage in the evolution of the head, and that it is possible to convert the oblique position manually into a transverse position. They teach that it is possible, while the head is transverse, to apply the forceps to the sides of the head with one blade opposite the sacrum and the other opposite the pubic symphysis, the concave border of the blades looking toward the occiput. Such an application will give the operator control of the head and permit him to rotate the occiput still farther around until the latter comes under the symphysis.

In theory this is a satisfactory solution to the problem, but practically, in the majority of cases, the oblique position of the head, where it can be overcome at all by manual deflection, is only changed temporarily. As soon as the hand is withdrawn the head is again deflected, before the application of the forceps can be carried out.

The classic application, with the blades applied to the sides of the head while the latter is in an oblique position (namely, for instance, in an R. O. P. position, with the blades in the left oblique diameter), is equally disadvantageous. In the first place, the desirable relationship between the blades and the head, referred to above—that is, in which the concave border of the blades is directed toward the occiput, as in L. O. A. position—is lacking. In the second place, owing to the imperfect flexion of the head which usually exists in these cases, the forceps necessarily grasps the sides of the head in a vertical direction with the points of the blades impinging upon the submastoid regions. The danger of injury to the child is thus greatly increased. These disadvan-

tages are entirely outside of the impracticability of such an application arising from the fact that, as soon as the handles are depressed in the attempt to lock the blades, especially in high applications, the blades rotate at once to the sides of the pelvis, irrespective of the position of the head. It, therefore, appears that practically the application in the transverse pelvic diameter is the most feasible—that is, grasping the head in one or the other of its oblique diameters running between the frontal and parietal regions, according to the position of the head in the pelvis. This prohibits any instrumental control of the head with a view to rotation, the operator relying entirely upon traction with the instrument. Therefore, the question as to the possibility of controlling the rotation of the head while it is still high within the pelvic cavity is answered in the negative.

If, therefore, early rotation in difficult cases is not feasible we are confronted with the question: Can artificial rotation by the forceps be carried out favorably at a later stage in labor? If it can, it is to be considered as justifiable for the reason that the excessive traction made necessary by the impossibility of controlling early rotation is at great risk to the child. Therefore, upon the rapidity with which ultimate rotation is accomplished will depend very often the child's safety. As to the mother, it is to be remembered that in spontaneous deliveries in posterior positions rotation occurs as a rule as the head impinges upon the perineal floor. In difficult cases, however, owing to the absence of molding and the want of flexion, rotation is delayed. As a result the head descends obliquely and the wide separation of the blades distends the perineum and causes serious rupture. If, therefore, the head can by artificial rotation be carried out of its oblique position as it passes the bony outlet the mother's interests are most favorably guarded.

The danger from rotation should be kept in mind. The vaginal wall may be easily caught by the edge of the blade and lacerated, or by forcibly twisting the blades the vagina may be drawn from its loose connective tissue base with a resulting separation of the surrounding muscles from their fascial attachment. Tarnier has demonstrated (*Precis d'Obstétrique*, Ribemont-Dessaignes and Lepage, Paris, 1897) the method of rotation. A violation of the principle involved means serious injury to the mother's soft parts. If rotation were attempted without regard to this principle, about to be described, we should be in the unhappy dilemma of either

injuring the pelvic floor by traction upon the widely separated blades in an oblique application to the head in an immovable position or of injuring the vagina by improper rotation of the blades within it.

The error in attempting to favor rotation of the head by the forceps by the usual method lies in a preconceived idea that in order to rotate the blades concentrically with the axis of the pelvis it is necessary to rotate the handles upon their long axis. Tarnier has shown that if such a movement is carried out the blades will describe a cone of revolution, the base of which is traced by the points of the blades within the pelvis. The diameter of the base of this cone is greater than the pelvic excavation. In other words, the points of the blades in being swept in a circle are so far removed from the axis of the pelvis as to injure the vagina. To state it in other words, the radius drawn from the axis of revolution to the tips of the blades is greater than can be safely accommodated within the pelvis.

Tarnier recommends as a remedy for this, or rather as a safer and more effective method of rotation, rotation of the handles in such a way as to permit the ends of the handles to describe a wide circle of revolution, leaving the tips of the blades as a fixed point. Thus the cone of revolution is traced by the ends of the handles without the pelvis. Under these circumstances the greater the diameter of the base of the cone the less the deviation of the points of the blades from the axis of rotation. Practically, the procedure may be simplified by pressing the ends of the handles toward that side of the pelvis in the direction toward which the presenting part of the head is to rotate, without any attempt to rotate the handles. The difference in direction between the blades and the axis of the handles insures a more or less extensive rotation of the former when this procedure is carried out. A persistence in this lateral pressure will result in a gradual change in the position of the handles, so that they will be found to describe a circle of rotation as the head changes its position, yielding to the direction imparted to them by the altered position of the blades.

The leverage which comes into play by the application of the pressure to the ends of the handles makes it necessary for only a moderate degree of pressure to be used. The result of such pressure in favoring rotation is a guide as to the wisdom of continuing it. Where such lateral pressure applied to the ends of

the handles is apparently not effective, one of three possible influences prevents rotation: (1) The attempt at rotation may be made too early. (2) The head may be too large to undergo rotation. (3) The natural tendency may be for the occiput to rotate posteriorly, or in an opposite direction to that in which artificial rotation is attempted.

A study of each case by this test will enlighten the operator as



FIG. 1.



FIG. 2.

(After Ribemont-Dessaignes and Lepage.)

In the first figure the base of the cone of revolution is described by the ends of the handles without the pelvis. In the second figure the base of the cone of revolution is described by the points of the blades within the pelvic cavity.

to the advisability of attempting artificial rotation in order to terminate labor. Where rotation has been successful by this method it involves a reapplication of the forceps, which has become inverted, before the head is fully extracted, a procedure which is described in the text-books as the double application of Scanzoni.

The above described method is, of course, independent of Tarnier's principle of axis traction, and although the traction forceps,

by the freedom which they permit to the movements of the head, are indicated in such impacted posterior positions they exert no positive influence in favoring rotation.

The maneuver described above may be carried out, however, with equal success with the Tarnier or Symptom forceps as with the ordinary obstetric forceps.

1709 SPRUCE STREET.

TUBERCULOSIS OF THE FEMALE GENITALIA AND PERITONEUM.

BY

JOHN B. MURPHY, A.M., M.D.,
Chicago, Ill.

(Continued from page 754, December number.)

SECTIONS III. AND IV. TUBERCULOSIS OF THE PORTIO VAGINALIS AND CERVICAL CANAL.

Frequency.—This form is very rare and seldom combined with tuberculosis of the fundus. Thus Spaeth, in 119 cases of uterine tuberculosis, found the cervix affected in only 6. Vasmer, in 6 case of tubercular endometritis, reports the cervix free from changes. Stolper reports nine cases of genital tuberculosis in one of which the cervix was involved. In 87 necropsies on tuberculous women by Doran, there was involvement of the genitalia in 5, but of the cervix in one only. Geil records two cases in which the fundus, tubes and vagina were tuberculous, yet the cervix remained free. Michaelis, in reporting three cases of cervical tuberculosis, states that he regarded one as a primary tuberculosis since the uterus itself exhibited no changes. The other two were associated with tuberculosis of the upper genitals and lungs. This case, it seems, is not the only one of primary cervical tuberculosis. Others have been reported by Friedländer, Emanuel, Kauffman and Spaeth.

Cornil studied a uterus removed by hysterectomy for supposed cancer. The cervix was hypertrophied and transformed into an indurated mass with irregular vegetations. In spite of the advanced state of the lesions, nothing could be told from the histologic examination and the inoculations alone were conclusive.

In Emanuel's case, a woman of 50 had a tumor of the cervix

the size of an apple, with invasion of the vagina. Microscopic examination showed tuberculosis; hysterectomy; death. Necropsy showed the lungs healthy; there was miliary tuberculosis of the liver, spleen and peritoneum. The cavity of the uterus was entirely filled with caseous masses. Since the tubes were absolutely unaffected, Emanuel believes this proves the disease to be primary in the cervix. What confirms it, in his opinion, is the considerable increase in size of the cervix and the invasion of the vagina. In cases of secondary invasion of the cervix there is no such increase in size.

Williams narrates two cases of ulcer of the portio vaginalis, which on necropsy examination showed tubercular nodules and bacilli. The lesion was clearly limited to the vaginal portion of the cervix and the neighboring part of the vaginal mucosa; the rest of the genitalia were absolutely normal. In both patients there was extreme pulmonary disease.

Walther reports the case of a woman of 26; no family history. After a normal accouchement, noticed a profuse bloody-mucous discharge, with erosion about the cervix, bleeding easily. Curettement; cure. The interesting point in this case is the histologic examination of fragments of mucosa. In that from the cervix, it was possible to find islets of pavement epithelium, a typical ulceration deprived of epithelium and strewn with miliary tubercles and in places granular cells with caseous masses. One might, says the author, suppose the tubercular process to be limited to the cervix, but examination of the mucosa from the fundus showed, besides marked granular hyperplasia, giant and epithelioid cells in the interstitial tissue, but without any characteristic tubercles.

Matthews records the case of a negress of 38 with dysmenorrhea for three years; mucopurulent discharge and hypogastric pain. The cervix was twice the normal size, ulcerated and bled easily, with propagation of the ulcer to the vagina. Hysterectomy per vaginam, with partial ablation of the vagina. Examination after removal showed diffuse infiltration of the cervical cavity (tubercles, caseous degeneration) miliary tubercles of the muscularis. Mucosa of the fundus and the tubes negative.

Driessen's case concerned a woman who had been operated on seven years before for stricture of the rectum, and had been complaining for some time of menorrhagia and a mucopurulent discharge. The cervix was found hypertrophied and studded with many small ulcers, most numerous about the os, and growing

fewer towards the periphery. In the cul-de-sac were little red spots with small yellowish centers. Vaginal hysterectomy. Examination of organ after removal showed characteristic change of tuberculosis. Here and there the epithelium of the cervical glands projected into the interior of the glands, forming papillary excrescences. In certain locations, little cavities filled with polynuclear leucocytes were found between the epithelial cells. These may be considered as small abscesses or as a commencing necrobiosis and are very characteristic of a tubercular affection.

Vitrac gives details of a woman with tubercular history; the cervix was enlarged posteriorly with hard irregular masses; the uterus itself was small. Consolidation of left apex. Hysterectomy; examination showed the masses collected in the cervical lip. Follicles more or less mixed up between the base of the glands inside, and the cervico-vaginal mucosa outside. Some were separated from one another by the organs about which they are developed—acini, vessels, etc. Bacilli were found and inoculation experiments in guinea-pigs were positive.

In Frank's patient, the disease was mistaken for sarcoma. Some five or six years previous, she had tuberculosis of the metacarpal bone and one phalanx of the middle finger, which were excised, and a cure resulted. The portio vaginalis was much modified and resembled a grayish-yellow mushroom. The tissue about the os was proliferated and covered with vesicles and nodes. This proliferating mass bled easily, and everything seemed to indicate a cancerous growth. A piece being excised for examination, violent hemorrhage ensued, so free as to require gauze tampons. The uterus was extirpated, the tubes being apparently healthy; recovery; the secretions examined three months later showed no bacilli. Frank believes the infection in this case was communicated by the hand or by soiled linen. He thinks the idea of infection by metastasis or through the lymphatics must be abandoned, for the peritoneum was normal and contained no fluid. A curious feature was that the patient had never suffered any pain, and sought relief for amenorrhea.

Beyea's case was a young woman of 23, with no tubercular history, but having irregular menstruation and leucorrhea for three years. The portio vaginalis was hypertrophied to twice its normal size, and was eroded for some little distance (nearly an inch in places) from the os; this eroded area was bright red and bled easily. Pieces exhibited showed miliary tuberculosis and giant cells. Curettement, high amputation of cervix and bilateral sal-

pingo-oophorectomy; patient in good condition sixteen months later. Microscopic examination—the flat epithelia of the portio vaginalis showed inflammatory changes beginning by proliferation half an inch from the os externum and progressing in some places to complete destruction; at first the cells preserved their outline, then coalesced into a homogeneous mass, which gradually disappeared. An extensive infiltration of small round cells in company with leucocytes was quite general under the squamous epithelial layer, and in places even penetrated the latter. The papillomata growing from the cervical canal were slender, close together, covered with columnar and cubical epithelium. The stroma also was infiltrated with small round cells, leucocytes and an occasional miliary tubercle, frequently inclosing giant cells. The underlying endometrium and a considerable portion of the new tissue showed the same changes. Bacilli were discovered only after examining several slides.

Lewers met with what he considered primary tuberculosis of the cervix, which simulated cancer and was treated by hysterectomy, with recovery. The patient was a multipara of 36 and for nine months had a fetid and sometimes bloody discharge, in which shreds of membrane could be distinguished; there was a vague pain in the lower abdomen. An aunt had died of tuberculosis, but this was the only case of the disease in the family. On inspection, the os was found enlarged, and occupied by a soft, friable tumor, which bled easily on being touched. The uterus itself was not enlarged and was very mobile. On examining the specimen, the cervical canal was found occupied by a papillary tumor extending to the os internum. Under the microscope, the mucosa was the seat of inflammatory thickening in the form of bands; these on section showed groups of grayish tubercles, with masses of well formed giant cells. Six sections were examined for bacilli with negative results. Lewers expresses the belief that cases of this kind may explain the occasional instances of apparently spontaneous cure of cancer.

It is evident that several varieties of this form of tuberculosis are met with—the ulcerative, which is the most common; the papillary, or budding, which Emanuel considers to be characteristic of cervical tuberculosis; miliary tuberculosis; and lastly, the “bacillary catarrh” of Schütte.

As Martin observes, it is remarkable that even in the puerperal uterus, in which the cervix has undergone considerable trauma, this portion, as a rule, presents no tubercular lesions, while those

of the tubes are far advanced. Is it the tenacious secretion of the cervical mucosa, or, as Vassmer believes, the thick epithelial layer here which opposes the penetration of the bacilli? This point, says Martin, remains unsolved as yet. Menge experimentally infected the cervical canal with many different varieties of bacteria and found it sterile twelve hours later.

Merletti (quoted by Amann) made some interesting experiments with uterine secretions obtained through the canula. *He was able to obtain results in cases even when no tubercle bacilli could be detected in the discharges.* Inoculations made with the fluids thus obtained, showed the existence of tuberculosis, not only when the disease involved the uterus, but where the peritoneum was affected. Hence, positive results from inoculations do not always indicate genital tuberculosis, they may be due to peritoneal disease but the inoculation should be made in every suspicious case, as it involves no risk to the patient and when positive shows the disease in some portion of the tract.

Fraenkel was the first to point out that tuberculosis of the cervix may exist in the same subject with similar disease of the tubes and the intervening fundus be entirely free. Sinclair has also pointed out a somewhat similar predilection. In tuberculosis of the fundus, the disease seldom extends to the os internum, while conversely, carcinoma of the cervix as seldom extends up through the os.

Beyea, in addition to his own case, collected 68 others of tubercular infection below the internal os, from the literature. Thirty of these were discovered at the necropsy, with far-advanced lesions of the genital tract, and distant parts. Two were post-mortem discoveries of primary cervical tuberculosis. Twenty-two were clinical cases—of these 3 were associated with lesions in other parts of the genital tract, and distant parts of the body, four with lesions in distant parts alone, nine were restricted to the cervix; in 19 cases of the total 69, the disease was localized in the portio vaginalis; in 6 to the cervical canal; in the remaining 44, both portions were involved. These statistics impress on us how frequently the disease is overlooked and how frequently the disease is limited to the cervix uteri.

Ulcerative Form.—This may be met with as large or small ulcers occurring over the vaginal portion or cervical canal. When large they are usually single, and when small, multiple. In some cases, the entire portio vaginalis is eroded and excavated. The ulcerative process appears to commence near the os externum and

spread over the vaginal portion and up the canal. When the ulcers are large, they are scooped out, but with abrupt edges. The cervix is quite generally hypertrophied. The bed of the ulcer is lower than the margin, differing from cervical erosions or ectropium of the cervical mucosa.

Papillary Form.—In this variety there is great hyperplasia, forming a fungous mass or masses of a pink color, and occasionally reaching a great size, as in Emanuel's case, where it was as large as an apple. In the advanced stages, these masses may be partly cast off, leaving a surface covered with tubercles. Fraenkel compares these proliferations to the similar ones frequently found on the nasal mucous membrane. The mass bleeds readily and bears a close resemblance to carcinoma, and to increase the confusion, Alterthum, in one case, discovered in addition to proliferations of the surface and gland epithelia, concentric imbricated deposits of cells, resembling the "epithelial pearls" of cancer. Tubercular changes were recognized with great difficulty, and the microscopic picture much resembled that of carcinoma. The cervix is always hypertrophied, irregular and elastic.

Miliary Form.—Tubercles may be found scattered over the *portio* vaginalis, cervical mucosa and in the stroma of the cervix. Associated with this form, there usually occurs diffuse formation of granulations, with a tendency to fibrosis in some cases. These granulations may become conglomerated, softened and an ulcer results.

Bacillary Catarrh.—In this variety, pointed out by Schütte, the process is limited to the surface epithelium and the glands, which may be filled with caseous material, containing numerous bacilli.

As regards microscopic appearances, we find many variations in cervical tuberculosis, depending on the stage of the process and the form of the disease. Tuberculosis of the cervical mucosa manifests itself primarily by a proliferation and metaplasia of the surface and glandular epithelium. The gland lumen becomes occluded by division of the lining cells. In cases like the one of Alterthum, already alluded to, where the microscopic appearances closely resemble carcinoma, a large number of slides must be examined until the tubercular nature is positively demonstrated. In the beginning of mild forms of cervical tuberculosis, the infiltration of small cells may be limited. After the glandular lumen is obliterated by proliferation of the lining cells, the glands appear as solid columns. As the disease progresses, the metaplastic cells show retrogressive changes, finally ending in necrosis and

caseation. Giant cells are only occasionally encountered in the gland proper. According to Emanuel, the cervical glands and stroma may also hypertrophy in the tubercular process and resemble the section of an adenoma.

As the degeneration of the epithelium progresses, granulations take its place, and the cervical mucosa is now covered with granulation tissue in which only glandular debris may be recognized. Giant cells and tubercles are now observed. More or less hypertrophy of the connective tissue is seen in nearly all forms, coexisting in the more chronic forms with areas of caseation and necrosis. In the papillary form, the fungous growths are made up of granulations and new formed connective tissue, in which are blood vessels, giant cells and tubercles in addition to diffuse epithelioid cell formation.

Symptoms and Diagnosis.—In this, as in the other forms of genital tuberculosis, the disease is most active during sexual life. The ages in 58 cases, as given by Beyea, are as follows: 17 to 20 years, 6 cases; 21 to 30 years, 27 cases; 31 to 40 years, 9 cases; 41 to 50 years, 5 cases; 51 to 60 years, 5 cases; 61 to 70 years, 3 cases; 71 to 79 years, 3 cases.

DIFFERENTIAL DIAGNOSIS (WHITACRE).

Uterus	Tuberculosis	Epithelioma
Size	Small	No regularity.
Aspect	Papillary form—muriform mass with small vegetations in the vicinity Ulcerative—surface covered by caseous material and mucus; border seed bed of granulations	Usually fungous. The cavity form lacks granulations in the edges. Never solely interstitial.
Touch	Papillary—surface knobbed, smooth, polished, elastic, no induration; limits not clear Ulcerative—depression without diffuse infiltration; border granular	Surface roughened; consistence very hard. If large and fungous, the base is very hard.
Color	Papillary—rose-red; deeper color than surrounding Ulcerative—bottom yellow or red	Grayish.
Spontaneous pain	Little or none	Characteristic.
Sensitiveness	Present	Absent.
Bleeding	May be slight in both papillary and ulcerative form	Frequent and abundant.
Discharge	Papillary—mucous Ulcerative—often purulent	Fetid and abundant.
Progress	Papillary—extremely slow Ulcerative—slow, yet may produce extensive ulceration and fistula	Progressive and accompanied by constitutional symptoms.
Pathologic histology	Both show typical miliary tubercles and tubercle tissue	Typical epithelioma with pearls and columns of pearls.
Bacteria	Tubercle bacilli found in smear preparations or by inoculating guinea-pig	None.

The subjective symptoms are vague. The patients usually complain of a profuse leucorrhea, purulent in character and occasionally tinged with blood and a peculiarly offensive odor, but not like that of malignant disease; this was present in 24 of 37 clinical cases. As regards menstruation, it was normal in 3, absent in 12, and profuse in 13 cases.

Clinically, the differential diagnosis between erosions, inflammatory proliferations and commencing carcinoma is sometimes exceedingly difficult. In suspected tuberculosis, we should look especially for small nodules, areas of caseation and ulceration; not finding these, a portion should be excised for microscopic examination. Beyea observes that, as in early carcinoma of the cervix, the diagnosis of tuberculosis must be always that of suspicion, to be made positive by microscopic examination of the fragments removed by cutting and not by the curette; also by inoculation of fragments into guinea-pigs.

The unsatisfactory nature of the symptoms may best be judged from the clinical diagnosis of 56 cases given by Beyea. In 14, it was carcinoma or suspected carcinoma; in one, sarcoma; in 4, ulcer of the cervix; in one, *ulcus rodens*; in one, vegetative growth of cervix; in one, indefinite cervical disease; in 28, phthisis or tubercular peritonitis; in one, tubercular meningitis; in one, apoplexy; in 2, abdominal tumor; and in one, caries of spine.

Treatment.—Frank and Emanuel believe it best to remove the uterus. Michaelis distinguishes between primary and secondary genital tuberculosis. He advocates curettement, if the uterus alone is involved, without the adnexa. In the secondary forms, a radical extirpation, provided the patient's condition will permit.

From Beyea's statistics, we learn that 15 cases have been treated by surgical measures; ten panhysterectomies; one curettement, combined with amputation of the cervix and double salpingo-oophorectomy and four, by amputation of the cervix.

Of the hysterectomies, three died from shock, phthisis and tubercular peritonitis. Of the remaining seven, the majority (six), were well after 5½ years; in one, only four months had elapsed.

The case of curettement, amputation, etc., was apparently cured sixteen months after the operation. Two of the amputations of the cervix recovered and two died of phthisis.

Local applications were made in eleven cases, one is said to have recovered, five improved temporarily, and in five the disease progressed. In the cases where the cervix alone is involved, amputation of the cervix is ample. An operation, as panhysterect-

tomy, which gives a mortality of 30 per cent., should not be performed, except in the rarest instances. Curettement, with cauterization by 30 per cent. chloride of zinc solution, applied by a saturated gauze tampon, which should be allowed to remain 36 hours, gives good results, and if the disease shows return, it is in a small area and favorable for extirpation. It has the same effect as a preparatory cauterization for extirpation of the uterus in carcinoma of the cervix.

SECTION V. TUBERCULOSIS OF THE FUNDUS UTERI.

Frequency.—This form is the most frequent, after tuberculosis of the tubes.

Merletti, in 172 cases of genital tuberculosis, found well-marked lesions of the uterus in 75.

Stolper, in 34 necropsies on tuberculous women, found uterine tuberculosis in 3, and Wolff, in 17 similar necropsies, found uterine tuberculosis in 3 also.

Vassmer, reporting 6 cases of tuberculosis involving the uterus, in 5 of which diagnosis was established by the curette, states they appeared at the clinic within ten months.

Cullen, in eighteen months, diagnosed 6 cases from the clinic, and in Martin's clinic at Greifswald, where the mucosa is examined as a matter of routine, in some 1,500 cases tuberculosis was found 24 times.

Cases.—Hofbauer reported a case in a woman of 57. The patient felt well until the preceding few months, when she noticed loss of appetite and weight. There had been a whitish discharge, without odor, but at times mixed with blood; no pain or feeling of weight. The uterus was enlarged, the mucosa covered with granulations containing tubercles and giant cells.

In Frank's case, in a virgin of 21, there was tuberculosis of the uterus secondary to lesions of the lungs. The patient complained merely of amenorrhea.

Von Hauschka narrates what he believes to be a case of primary uterine tuberculosis. A patient of 18 had profuse leucorrhea, and the attending physician believing it to be due to metritis, curetted away much yellow caseous material and pus. She was then removed to the hospital and a hysterectomy performed. The uterus was enlarged, the mucosa was infiltrated with tubercles extending into the muscularis but not reaching the serosa. The mucosa of the tubes was also involved, the ovaries, apart from some fol-

licular degeneration, were healthy, and the peritoneum and intestines were free from disease. Recovery. As a careful examination failed to show any signs of tuberculosis elsewhere, the author believes he is justified in his opinion that this was a case of primary uterine tuberculosis.

Pathogeny.—Since the observations of Pozzi and Walther, uterine tuberculosis has been divided into three varieties: miliary, ulcerative, and pyometra (mixed infection). Stolper, however, claims that these are but stages of the same process and that they may all be present at the same time. It can readily be seen that the ulcerative form may occlude the cervix, giving rise to hydro-metra and eventually (from secondary infection) to pyometra (Frerichs, Orthmann, Krziwcki).

In practically all the published cases the lesion in the uterus is secondary to one in the tubes, hence the portion of the organ about the orifices of the latter is most often invaded.

The frequency with which the uterus is involved, compared with the tubes, is attributed by various authors to the changes incident to menstruation. Stolper agrees with this, and states that it is apparently confirmed by the fact that tuberculosis of the fundus is much more frequent before puberty and after the menopause. Sippel points out that the mucous lining of the tubes with the numerous folds is much better fitted as a lodging place for the bacilli than the smooth uterine mucosa, with a rich glandular secretion and subjected to monthly changes. In childhood, the delicate epithelium seems to afford but a limited resistance to the penetration of the bacilli.

The miliary form has been met less frequently than the others, but no doubt it has often been overlooked on account of the inconspicuous character of the lesions. Small tubercles are scattered over the mucosa; later on ulcers make their appearance and the mucosa may be partly or completely destroyed. In severe cases, the mucosa is wanting and its place is taken by granulation tissue. The muscular layer often remains intact for a long time, but in extreme cases, it also is partly absorbed, leaving merely a fibrous bag containing thick pus and caseous material.

In our monkey experiment No. 2 it shows that the tubercular process may extend deep into the muscular layer of the uterus into the body of the muscle coat from the peritoneal side, but it does not completely traverse the muscle coat. This would indicate that it is possible that the uterine mucosa might become infected from the peritoneum by direct transmission through the uterine

wall. We were unable to find in the literature the report of a post mortem showing this condition in the human, nor was a case reported in which a primary tuberculosis of the uterine mucosa penetrated the muscularis to the peritoneum. So that it is fair to assume that this is at least not a frequent route of transmission, either from the peritoneum to the mucosa, or vice versa.

The uterus may be not at all or but slightly enlarged. Again, it may be considerably increased in size and fluctuate from retention of contents just described. There is, as a rule, some mal-position.

Tubercular infection may invade a mucosa which is already diseased. Thus, it has been seen to complicate cancer and ordinary polypoid growths. In 24 cases of uterine tuberculosis in Martin's clinic, 3 were complicated by myoma and 1 by cancer.

Concerning the microscopic changes it may be said they are first manifested in the glands. The cells assume a cuboidal shape and the nucleus moves toward the center. These glandular cells proliferate and in places project as papillæ into the gland lumen, which is frequently entirely obliterated. In the early stages, there may be proliferation and metaplasia of the surface epithelium; later on, however, degenerative changes occur as in the glands. Giant cells may also be observed in the glands, in rare cases, and an infiltration of small round cells has been observed between the proliferating glandular cells.

Associated with the above process is a series of interstitial changes—small-celled infiltration, with formation of epithelioid and giant cells. In very acute cases, giant cells and inflammatory changes minus the tubercle formation may be the conspicuous changes. The infiltration extends progressively towards the muscularis, the superficial layers of which are involved in the tubercular process. Finally the entire surface becomes caseated.

Relations to Pregnancy and Parturition.—While tuberculosis of the uterus may manifest itself from 9½ months to 64 years (Polano), it is more frequent in multiparæ. In five out of six cases of Polano, the affection, according to the patients, dated back to childbirth. The explanation of this is that during parturition, blood-vessels rupture, the circulation is interfered with and the formation of thrombi furnishes soil for the tubercle bacilli in the circulation. Again, arteriosclerosis is more common in multiparæ and this disease of the uterine vessels manifests itself especially at the menopause.

Can pregnancy in a tuberculous uterus go on to full term?

From the researches of Kochel and Schmorl we must answer this in the affirmative. Schull, another observer, reports a case in which he found caseous material and tubercle bacilli in a pregnant uterus, the fetus being still alive. That pregnancy in such a uterus is not without danger is shown by Casper's case, in which a pregnant uterus ruptured spontaneously as a result of tubercular softening, at the end of the third month.

A tuberculous placenta may give rise to acute miliary tuberculosis, as proven by Ausche's case, where a woman, moribund with phthisis, died three days after childbirth. Tuberculosis was demonstrated in the placenta. The child died 26 days after birth, and the necropsy showed tuberculosis of the liver, spleen, lungs and kidneys. Bacilli were found in all these organs.

Finally, preexisting tuberculous disease usually lights up during pregnancy and the puerperium, or may first manifest itself at these times, and, as before stated, tuberculosis may give rise to extrauterine pregnancy.

There is nothing striking or pathognomonic about these. In short, they may be said to be those of ordinary endometritis. Menstruation may be regular, suppressed (as is so often seen in phthisis), or profuse. As might be supposed, from the disease process occurring in the uterus, a profuse leucorrhea is the rule, but even this is sometimes wanting. The diagnosis in most cases must be cleared up by an examination of the uterine scrapings.

The profuse and intractable leucorrhea of both extremities of life are very frequently due to tuberculosis of the uterine fundus. The persistent and profuse leucorrhea of girls from 4 to 14 years of age occurring rather suddenly and resisting local vaginal treatment, should always be suspected as tubercular in origin, and careful examinations of the leucorrheal discharge should be instituted. If these are negative, curettements should be made to determine the presence of bacilli. At or shortly after the menopause, profuse ichorous, irritating leucorrhea, without hemorrhages, should be considered as indicative of tuberculosis of the fundus uteri, and careful microscopic examination of the secretions and curettement products should be made. In an enormous majority of cases, these young or aged subjects are allowed to go on for years suffering from a curable disease, if the diagnosis had been correctly made. It is, however, overlooked or not thought of in most of the cases.

Treatment.—This is somewhat unsatisfactory so far, on account

both of the difficulties in the way of early diagnosis, and of the lack of unanimity among operators as to the proper course to pursue.

Several authors—Sippel, Walther, Halbertsma and Munchmeyer—report cases of recovery from merely curetting. Other operators, among them Doderlein, Schauta, Pozzi and Fehling, look on this procedure as only palliative and not to be resorted to save when the patient's conditions will not permit extirpation.

Since spontaneous healing of uterine tuberculosis is unknown, and complete removal by scraping is practically impossible, radical operation seems indicated. If the menopause has not been reached, the possibility of future conceptions must be taken into account. In a few cases, hysterectomy has been followed by acute miliary tuberculosis. The vaginal route seems preferable, since there is less interference with the peritoneum. In any event, the tubes and ovaries should be removed at the same time as the uterus. In children, where the resistance to tuberculosis and tendency to repair in all of the tissues is great, hysterectomy should be considered a *dernier ressort* and only applicable to cases where the most careful and painstaking curettements and zinc cauterizations have failed.

SECTION VI. TUBERCULOSIS OF THE FALLOPIAN TUBES.

Frequency.—This is by far the most frequent variety of genital tuberculosis and is usually bilateral.

Schramm, in a series of 3,386 necropsies on females, found tuberculosis of the tubes reported in 34. Von Winckel, in a similar series of 575 necropsies, found 5 cases, and Donhoff, in 509 necropsies, 14 cases.

Frerichs, in 76 necropsies on tuberculous women, found the tubes involved in 12, and Von Rósthorn (Vienna), in 40 necropsies on tuberculous women, found the tubes involved in 2.

In 620 cases of salpingitis, observed by Martin, 17 were tubercular; in 103 by Von Rosthorn (Prague), 5 were tubercular; and in 61 by Williams, 7 were tubercular.

Maas, in reporting a case of tubal tuberculosis in a child, directs attention to the infrequency with which it occurs in the tubes at this age, while common elsewhere. After searching the literature carefully, he found but seven cases, his own making the eighth. The latter was in a five-year-old girl, dying of general tuberculosis. There were tubercular ulcers on the mucosa of the

uterus and tubes; the muscularis of the former was normal; that of the tubes was filled with tubercular nodules. The ovaries were normal. The author remarks that the source of infection here was very obscure; coitus, unclean instruments, etc., could be excluded; besides, the vagina was not involved. Old fibrous tubercles were found along adhesions extending from the umbilicus inward to the parietal peritoneum, and he believes the umbilicus was the portal of entrance for the infection.

The case cited at the end of this chapter illustrates a common type of tuberculosis of the tubes in children and the results that can be secured by the conservative treatment.

Kraus gives details of an extremely interesting case in a multipara of thirty, with a history of appendicitis 10 years before. A tumor was palpable in the Douglas' pouch, which proved to be an enlarged ovary, and a tubercular tube and vermiform appendix. The tubercles were confined to the distal end of the Fallopian tube, and the adherent tip of the vermiform appendix. There was an ovarian abscess but no tubercles could be discovered in this organ. This author believes the disease process began in the appendix and extended to the Fallopian tube, possibly along the appendiculo-ovarian ligament.

Kundrat states that in 140 hysterectomies at the Göttingen clinic during three years, tuberculosis of the tubes was found four times:

1. Nullipara of 22; family history of tuberculosis and scars of suppurating cervical glands.
2. Multipara (9 births), 43 years old; treated for a long time for tubercular peritonitis.
3. Multipara (9 births, 2 abortions), 31 years old; the disease began after childbirth and, as a most complete examination failed to reveal any other focus, Kundrat believed this to be a case of primary tubal tuberculosis.

4. Multipara of 36 years; this case is very unique, in that there was a cancer of the cervix co-existing with tubercular salpingitis.

Pathogeny—As Hegar pointed out some years ago, the tubes are predisposed to tuberculosis by their spiral form and pleated mucosa, which favor stagnation of secretions. A preliminary catarrh seems to enhance the dangers of infection. The sources of the latter are numerous—from the peritoneum, through the blood or lymph vessels, and from outside the body. In our opinion the normal constriction and valves of the tube about $\frac{5}{8}$ inch from the uterus favors the arrest of bacilli at this point. Clinically this

is the most frequent area involved and the pathologic changes indicate that it is the primary focus in the tube. It is also at this point that the gonococcus infection is arrested and retained sufficiently long to destroy the mucosa and produce the stricture, which is the most prominent etiologic factor of gonorrheal pyosalpinx.

Pinner's experiments show that fine particles, such as lamp-black or vermilion, introduced into the abdominal cavity, find their way through the tubes into the uterus. We might *à priori* expect the tubercle bacilli to be similarly transported and no doubt they are in some cases. However, in numerous instances the peritoneum is free from tubercular lesions; again, the latter may be extensively diseased and yet the tubes not be involved, as illustrated by the following case:

Mrs. B. McW. Housewife. Aged 23. Admitted to Mercy Hospital, August 17, 1903.

Family History.—Negative.

Personal History.—Has been married two years; never pregnant. Menstruation began at 15; was regular; lasted four or five days; not painful, until after present trouble began. Health has always been good. Weight 144 pounds.

Present Illness.—Two years ago last July (July, 1901), patient was attacked with a sudden and severe pain in the right lower abdomen. It was accompanied by nausea and shortly followed by elevation of temperature. There was great sensitiveness in the right iliac region. With the onset of the pain, patient had a constant desire to urinate, and when she did the quantity was small and it caused great pain and burning. The pain in the abdomen, which was cramping in the beginning, gradually subsided to a dull, aching pain, and persisted for one week. Urinary irritation lasted the same length of time. She had to be catheterized a number of times. The vomiting lasted but two days. The bowels were constipated for a week. The patient gradually recovered from the soreness in the abdomen, but she never felt "quite well" after that date. Two months later she had a similar attack, accompanied by vomiting, but not by the urinary irritation. This attack lasted about a week; since then she has had similar attacks every month or two not always accompanied by vomiting. Occasionally the pain, during the attack, was felt in the left lower abdominal region. The last attack came on a week ago. This was more mild than usual. During the attack, she

felt most of the pain on the left side, with some soreness on the right. There was no nausea, nor vomiting with this attack.

Since July, 1901, patient has had cramp-like pains during menstruation; otherwise the menstruation has been the same as previous to this attack, both in duration and quantity. There is an absence of leucorrhœa.

Operation.—Appendix removed and found enlarged; covered with tubercles on the outer surface, but not perforated. It was not fixed by adhesions to the caput coli. It was about twice its normal diameter and its wall was infiltrated. Whether this was from the infection from within, or from the tubercular infection from without, it was impossible to say. There was no tuberculosis of its mucosa.

Median incision was then made and both tubes removed. They were both constricted by a firm band at the base of the fimbriæ. This constriction would only admit the finest probe. It was not a complete organic stricture. The tubes were enlarged about 50 per cent. There were no tubercular nodules discernible and no areas of infiltration on the mucosa. The end of the right tube was more firmly contracted than the left and a few of the fimbriæ were adherent and turned in. They presented the appearance of a wheat sack where the string is tied on the end. This is a characteristic appearance where the tube is free in the peritoneum and not infected with the tubercular material.

Microscopic examination of the tube showed a number of classic tubercles on the peritoneal surface. There was no evidence of tuberculosis either on the surface of the fimbriæ, or on the mucosa of the tube. The constriction at the base of the fimbriæ to occlusion, was due to an extensive deposit of connective tissue at the base of the fimbria. Why this tissue was deposited, I will not attempt to explain, but it is a classic condition and appears to be a result of reflex contraction of the tube as a primary condition and secondary cicatricial and peritubal infiltration and fixation. The contracting bands appear in the peritoneal and subperitoneal tissue and not on the mucous side. Is this the result of the effort of the tube to prevent the admission of the tubercle into the tube, or is it a favorite location for peritubal infiltration? It appears to me as the former, it being such a classic pathologic condition.

The abdomen was closed without drainage and patient made an uneventful recovery.

In only a few cases of tubercular peritonitis in our experience, in which the fimbriated end of the tube was free, was there an

absence of tuberculosis of the tube, and in these cases there were annular occlusions of the tubes at the base of the fimbriæ. Often the tube on the other side had its fimbriated end closed. When the fimbriated end is sealed and the infection is a descending one, from the peritoneum primarily, it can be seen that the tubes should be free from tuberculous disease.

EXPERIMENTS ON MONKEYS.

In order to demonstrate that the disease is transferred from the peritoneum to the tubes, the following experiments were performed on monkeys:

Monkeys were selected, first, for their well-known susceptibility to tuberculous infection; second, because their bodies are erect, more like the human, thus tending to the accumulations of peritoneal pathologic products in the pelvis, and third, because the genital organs—that is, the tubes, ovaries and uterus—in their anatomic conformation, are like miniature human organs.

Monkey No. 1. Female. First operation, October 8, 1902. Peritoneal cavity opened and a healthy ovary removed from Mrs. M., transplanted in and on right broad ligament. The ovary had been removed thirty minutes before transplantation and kept in warm normal saline solution. It was split longitudinally through half its thickness and placed on the edge of the broad ligament, with half put under the peritoneum through an incision. Secured in position with a few fine catgut sutures. Abdominal wound closed in layers with catgut and skin approximated with a subcutaneous catgut. Primary union followed.

Second Operation.—November 8, 1902. Abdomen opened through scar of first operation. (a) Ovary found firmly attached to right broad ligament in position in which it was placed at first operation. Surface of ovary was of a grayish-white color and showed evidences of blood circulation. It was separated from broad ligament and hemorrhage followed the separation. Adhesion to ligament was evidently organic; the ovary bled when incised and looked normal. Ovary submitted to microscopic examination by Professor Zeit and pronounced normal in every respect. (b) On this date, November 8, the abdomen of this monkey was infected with an emulsion of caseous tubercular cervical glands, removed from Miss H. S. an hour previously. It was injected into the peritoneal cavity and wound closed as in first operation. The emulsion was made by triturating the fresh gland

with equal parts of glycerine and water. Primary union followed. Monkey died December 2, 1902.

Post-mortem examination, made by Dr. W. A. Evans, showed the following:

"The body is that of a small rhesus monkey; female. It is quite badly decomposed. There is no evidence of tuberculosis in any of the thoracic viscera. The peritoneum shows most extensive tuberculosis. The omentum is diffusely thickened and yellow tubercle nodules are very abundant throughout. There are no naked-eye tubercles in the liver, the spleen or the kidneys. There is little evidence of tuberculosis in any of the structures in the upper part of the abdominal cavity. The picture is different in the lower part, where everything is in a solid mat. There is a moderate accumulation of fluid in the peritoneum. The intestines show no tubercular lesions in the mucosa that can be recognized by the unaided eye. The bladder mucous membrane shows no breaks. The wall is thrown into multiform projections. Sections were made of these. The uterus and tubes are imbedded in masses of tubercle tissue. Sections were made of the uterus and tubes. It is very apparent that tubercle infection occurring in any portion of the abdominal cavity of the female monkey tends to more exaggerated expression in the pelvic peritoneum. The same is true in the human, except so far as the omentum is concerned. It, when infected, becomes a thickened mass with caseous nodules and much connective tissue infiltration. A section of the right Fallopian tube at the uterine horn shows no evidence of tuberculosis. There is no lymphoid hyperplasia. The epithelium is piled up in more layers than is usual in the human subject. There is a much simpler arrangement of the arborization, simple non-branching papillary projections being the rule. In the underlying tissue we find no giant cells, no focal necrosis and no great connective tissue hyperplasia."

We conclude that the tubercular infection did not enter the tube and uterus from the fimbriated end.

Monkey No. 2. Female. Operation No. 1, Jan. 21, 1903. Peritoneal cavity opened. Small portions of a carcinoma coloides of the peritoneum (Zeit), which had been removed from the omentum of Mr. C. H. K. thirty minutes previously, together with several grammes of ascitic fluid from the same case, were placed in the peritoneal cavity. Wound closed as in monkey No. 1. Primary union followed.

Operation No. 2 on the same monkey, April 25, 1903. Abdomen

opened through scar. (a) Scattered over the visceral peritoneum and omentum were small nodules about $\frac{1}{8}$ inch in diameter, six or seven in all. These were imbedded in the tissue and showed no inflammatory reaction around them. Three of them contained small worm-like bodies, round, white and curled in half circles. The other nodules were grayish-white; no fluid in peritoneal cavity. Peritoneum elsewhere normal. Several nodules removed for examination.

Microscopic examination showed no evidence of perpetuation of the malignant growth. Two kinds of solid tissues were found. No. 1, the rolls above referred to, consist of heavy fibrous tissue, that has undergone hyaline infiltration; in the center of some of these is illly-defined tissue which takes a diffuse blue mist hematoxylin. This may have been and probably was the original inoculating material, now undergoing degeneration. No. 2, lymph nodes, new and of various sizes (Evans).

April 26, 1903, after removing specimens above mentioned, from the monkey, small pieces of triturated tubercular glands, removed one hour previously, were placed in the peritoneal cavity, together with several drachms of emulsion of glands in sterile water. Wound closed as usual. Primary union followed. Glands were removed from neck of J. F. McD. Monkey died June 7, 1903.

Post-mortem examination made by Dr. W. A. Evans showed:

"This is a badly decomposed female monkey of the rhesus variety. Post-mortem examination shows the thoracic viscera negative as to tuberculosis. The peritoneum contains an excess of fluid. The omentum is a thick hyperplastic mass and is closely adherent to the pelvic structures. No nodules are to be found in the liver. There are a few nodules, from the size of a pin-head to that of a pea, in the spleen. The kidneys are negative. There are a few tubercular nodules in the peritoneum. The enteric folds show a few nodules, but there are very few adhesions anywhere in this region. The colon also shows a few nodules, but no adhesions. We strip the entire abdominal and pelvic contents from the wall and remove it en masse. Posteriorly, in the upper areas, there are a few glands; these are small, showing that the *subperitoneal glands become infected from the peritoneum*. In the lower abdominal segment and in the region of the pelvic viscera, the lymph glands are very large and distinctly tubercular. The pelvic viscera are matted together in a solid tubercular mass. The bladder mucosa shows no breaks. The bladder function

necessarily was greatly interfered with by the extensive tubercular hyperplasia of all the surrounding structures. Section was made on the left side so as to show in the same slide some of the uterine mucous membrane and that of the Fallopian tube. These, to the unaided eye, did not seem tubercular."

This specimen confirms the others in that it shows the tendency of tubercular infection of the general peritoneal cavity to locate in the pelvis in the female monkey.

Sections of the bladder-wall show that the mucosa is piled up by muscular contraction. There is no tuberculosis in the mucosa nor in the muscular tunic. *Even with extensive pericystic tuberculosis, the bladder wall resists invasion.*

A section of the uterine and Fallopian tube walls shows that there is no tuberculosis in the mucosa of either. The muscular tunics are not involved, though there are tubercles of the caseating type on the serous coat, showing that the muscular wall is not attacked from the serosa, either in the uterus or tube.

A transverse section of the uterus shows the following:

The mucosa consists of glands and lymphatic tissue in about the same proportion as in the human subject. The glands are of the same structure as in the human subject. There are no evidences of any pathologic processes in this mucosa. External to this is the muscular coat, containing more cells than normal, but with no histology that suggests tuberculosis. Still external to this, is a thin circular layer of fibres; this frequently serves as a boundary. External to it are tubercles that show all the histology of tubercular nodules. These nodules are usually caseated. In certain areas the tubercular process is extending from the periphery across this circular boundary layer and into the body of the muscle coat. It does not completely traverse the muscle of the uterus in any portions of our section.

Monkey No. 3. Female. Operation, April 25, 1903. Small pieces of tubercular gland and several drachms of emulsion of gland in water place in peritoneal cavity. Glands removed one hour previously from the neck of J. F. McD. Wound closed as in Monkey No. 1. Primary union followed. Monkey died June 11, 1903.

Post-mortem examination by Dr. W. A. Evans:

"The pathologic findings in this experiment showed diffuse coal-escent tuberculosis of the peritoneum, involving the entire lower half of the abdomen. There were many adhesions. The tubes, uterus and pelvic peritoneum were matted. The fimbriated ends

of the tubes were sealed with the general adhesions. A careful microscopical examination of the mucosa of the tubes and uterus failed to reveal any evidence of tuberculosis."

The peritoneum and walls of the viscera in this experiment showed a more destructive attack by the tubercular process, that is, the peritoneum was of the ulcerative and adhesive variety, rather than of the serous variety, notwithstanding it was the same material taken from the same trituration and practically the same quantity as that in monkey No. 2. This shows that infections of the same virulence and type may produce different tissue changes; and, in this case, we feel we are justified in attributing this difference in degree of destruction to the difference in resistance afforded by individual monkeys. These results correspond with the clinical manifestations of tuberculosis, not alone in the peritoneum, lung and other tissues, *i.e.*, the destructive effect of a tuberculous infection depends rather on the power of resistance than on the special virulence of the infection.

General Comments on Monkey Experiments.—These experiments were undertaken to determine, (a) what portion of the peritoneum would be most surely attacked with tuberculous material, placed in the middle of the abdomen; (b) what lymphatics would take up the tuberculous material and what glands would arrest it; (c) would the bacilli be taken up by the tubes and would the mucosa of the tubes, uterus, or vagina become infected through this route; (d) would the tuberculous infection of the peritoneum produce a destruction of the walls of the abdominal viscera, through to their mucosa; (e) would tuberculous material placed in the abdomen be carried by the general tendency of the lymph current in the direction of the diaphragm, or would it settle in the most dependent portion of the abdomen in the monkey, as it appears to do in the human, regardless of the position in which it is primarily placed in the peritoneal cavity; (f) would the tuberculous material be taken from the peritoneum through the intestinal walls by ulceration into the lacteals and thence to the thoracic duct and be arrested in the lung, it being the first filter; (g) would the bacilli find entrance into the portal circulation and be arrested in the liver.

(a) It can be seen from the post-mortem reports that the pelvic peritoneum bore the brunt of the attack almost to the exclusion of the diaphragmatic area and the upper abdominal viscera.

(b) The retroperitoneal glands of the pelvis and the postperi-

toneal glands in the lumbar region were the only glands involved; the mediastinal and postgastric glands were not infected.

(c) The mucosa of the tubes was not infected in any of these cases nor was the mucosa of the uterus. This would tend to show that in the monkey the tubes do not take up the tubercle bacilli, or if they do, the bacilli do not find lodgement on these mucous layers. This may possibly be due to the severity of the tuberculous process produced in this manner, causing primary occlusion by adhesion of the fimbriated ends of the tubes, thus preventing the entrance of bacilli into the tubes and I feel that this is an important factor against the involvement of the tubes that does not exist clinically in many cases in the human.

(d) The tuberculous process destroyed the peritoneum, the intestines, uterus and bladder; in the uterus it extended quite deep into the muscularis, but in none of them did it penetrate clear through the walls.

(e) Tubercular products placed in the peritoneum of the monkey settle into the pelvis and are not carried by the lymph current and intestinal peristalsis in the direction of the diaphragm.

(f) The lung was not tuberculous in any of the cases, as evidence against this mode of metastasis.

(g) In experiment No. 3 it may be noted that there was no infection of the liver, but there were a number of miliary deposits in the spleen. It is difficult to say how these arrived in the spleen, but most likely the infection of the spleen was hematogenous, as the tubercles were scattered throughout the spleen and not in its surface, and that there were no transmissions through the portal circulation to the liver.

From the experiments of MacCallum (*Johns Hopkins Bulletin*) it would be inferred that all foreign material placed in the peritoneal cavity moved in the direction of the diaphragm. In our experiments, the tubercular material settled into the pelvis and only here and there was there a nodule formed above the level of the umbilicus. This corresponds also with our clinical observations in tuberculosis of women, the disease in an enormous majority of cases being below the level of the umbilicus. In men, however, the omentum is more frequently attacked though the pelvis of the male often shows the most advanced and often the only intraabdominal involvement.

Path of Infection.—Some evidence in favor of the hematogenous route is furnished by Schöttlander's experiments. This observer after injuring the fimbriated extremities of the tubes in

rabbits, injected tubercle bacilli into the circulation, and found tubercular changes follow in the abdominal end of the tubes. He is of the opinion that this mode of carriage is frequent, and that the ascending form, through the uterus, is rare. In this connection Amann points out that the blood supply to the tube may be of some etiologic importance. The ascending branch of the uterine artery at the base of the broad ligament gives off a principal branch, the ovarian (anastomosing with the ovarian artery and an accessory branch, the tubal artery). From the ovarian artery, two small branches are given off to the fimbriæ and abdominal end of the tube. Now the blood pressure from the heart to the small arterioles diminishes but slightly, being as 6:5 (Jacobson); in the capillaries, however, according to Donders, the pressure is but half that in the large arteries. The territory between the tubal network of the uterine artery and that of the ovarian artery is very poorly nourished. That the infection of the tubes, uterus and vagina may occur, independent of transmission from below, is proven by the cases of tuberculosis of the tubes, uterus and vagina in imperforate hymen, cited above.

Glimme asserts that the chief avenue of external infection is coitus with tuberculous men. In children and others with hymen intact, infection must, of necessity, be looked upon as coming from the peritoneum. Marchesi, reporting a case of primary tubal tuberculosis in a girl of 19, believed that in his case direct external infection took place and that powdered tubercular material, dust, etc., may enter the genitals of children. In one of Menge's cases, a woman, six weeks after marrying a tuberculous man, had symptoms of inflamed appendages with pelvic peritonitis. Constitutional symptoms of tuberculosis developed so the diseased tube had to be removed.

Other etiologic factors may enter into the case; thus while symbiosis between the gonococcus and ordinary microbes is rare, according to Menge (quoted by Amann), it is not exceptional to see this occur between Neisser's coccus and the tubercle bacillus. If the two germs penetrate simultaneously, since the gonococcus grows more rapidly than the tubercle bacillus, the soil for the latter will not be favorable. Schuchardt found tubercle bacilli in the secretions of two out of six cases of gonorrhea in males. Williams and Saulmann have also demonstrated the simultaneous presence, in the tubes, of tubercle bacilli and gonococci. Zweifel operated on a case in which gonorrheal pyosalpinx was present at the same time as tubercular peritonitis.

Another very potent predisposing factor, as Amann points out, is hypoplasia of the genital tract, first mentioned by L. Voit. In three cases of genital tuberculosis, Hegar and Alterthum found one case of hypoplasia of the uterus, one case of infantile uterus, as well as a tendency to bicornate uterus. Landouzy and Fournier (quoted by Hegar) have often found vices of development in the descendants of tuberculous families. Merletti, in 500 necropsies on tuberculous women, found 80 cases of uterine hypoplasia (35 infantile uterus, 2 bifid uterus, and 43 small uterus) and in 24 out of these cases, genital tuberculosis existed. This author considers hypoplasia as a necessary consequence to the cardiovascular hypoplasia so frequent in the tuberculous with hereditary disease. In order to give an idea of the frequency of hypoplasia in the tuberculous, Merletti reports that of 549 patients examined during the year at Parma, Italy, uterine hypoplasia was found 17 times (3.01 per cent.) and of 353 patients examined at Padua, uterine hypoplasia was found 36 times (10.2 per cent.). The latter city is noted for its numerous cases of tuberculosis. This observer believes that uterine hypoplasia predisposed to tubercular infection by favoring stagnation of the secretions. Tillaux and other observers have shown that in the male also, genital tuberculosis is often accompanied by an infantile condition of the prostate, penis and testicle. This is corroborated by Merletti, who, in 34 cases of tuberculosis of the male organs, found poor development of the prostate, evidently congenital, in five and ectopia of the testis in four.

The puerperal state plays as important a role in tuberculosis of the tubes as it does in tubercular diseases of the genital tract.

Lastly tubercular infection of a hydrosalpinx may occur (Schroeder's case from Fritsch's clinic).

In ascending infection, why does the tube become involved, while the intermediate portions of the genital tract—vulva, vagina, cervix and fundus uteri—escape? The answer is the same as that for the well-known immunity of the nose and upper air-passages in pulmonary tuberculosis—the resisting power of these intervening structures is greater.

Pathologic Anatomy.—With Martin and Rosthorn we may divide tubal tuberculosis into an acute secondary and a chronic primary form. The former is characterized by round-cell infiltration, few or no giant cells, and an abundance of bacteria. The mucosa in this form is rapidly necrosed. In the other form—the chronic primary—the mucosa remains unaltered for a long time,

at least, *in spots, though swelling is very marked; tubercle bacilli, either absent or few in number; the abdominal end of the tube is frequently sealed up by adhesions, and the serosa covered with miliary granulations in the beginning.

The tubes as, a rule, are enlarged, moderately firm in consistency and the serous covering thickened. They may be covered with false membrane in which nodules may be noticed. The caliber usually enlarges towards the abdominal end (cornucopia shaped); the fimbriæ swollen and frequently with nodular thickenings. The abdominal opening may be patent, partly closed, with a caseous plug protruding from it or impermeable. In this latter event, a pyosalpinx rapidly forms, which may reach enormous proportions (two litres, Stehmann). If the fimbriated end is open, which is often the case; if its walls are infiltrated with a non-mixed infection, caseous débris is discharged into the peritoneal cavity. As the tube frequently contracts adhesions to the adjoining viscera, cavities may be formed into which these masses are emptied, or become encysted. Finally, by the adhesion of the false membranes to the tube and the viscera, everything is matted together into one mass.

Nodule and Cyst Formation.—The isthmus may be free from any marked changes, especially in the descending variety, or it may exhibit nodule formation. The latter was looked on by Hegar as pathognomonic of tuberculosis, but this is now known to be unfounded. A similar nodular salpingitis of the isthmus is found in chronic gonorrhea. Its origin has been variously interpreted. Rokitsansky, Klebs, and others believed the nodules to be small myomata. Chiari thought they were due to hypertrophy of the tubal muscularis. Finally, Amann claims that in nearly, if not all, cases there are remnants of the Wolffian ducts, and Schauta, that, on account of the narrow lumen of the isthmus, the inflamed, swollen mucosa projects into the muscularis, causing hypertrophy of the latter.

These nodes themselves may contain cystic spaces and the folds of the mucosa in the tube proper may adhere to each other, also giving rise to cysts.

Pathologic Histology.—In the beginning we find cloudy swelling of the epithelium; the folds of the mucosa are richly infiltrated with round cells, are very vascular, and thickened with tubercles and giant cells. The muscular layer is free from changes. Later the epithelium exhibits degenerative changes and finally disappears. Necrosis manifests itself, usually in the tubercles at first;

finally, necrotic changes and caseation occur through the infiltrated mucosa. The muscularis is now infiltrated and may contain tubercles; atrophic changes are common and newly formed connective tissue has been observed in the muscularis a few times.

A few cases are on record in which the necrosis and caseation involved all the coats of the tube, leading to rupture and escape of the contents into the ovary, as shown in Miss N's history, cited under tubercular abscess in ovary. Calcification is occasionally, though rarely, seen and various stages in the tubercular process may be visible in the same tube. The changes about the ostium abdominale are nearly always more marked than elsewhere in the tube, except near the cornu, and this is the principal point relied on by the advocates of the peritoneum being the source of infection.

Symptoms and Diagnosis.—As the symptoms of uterine tuberculosis are practically those of endometritis, so the symptoms of tubal tuberculosis are those of salpingitis, in general, to which are added those of frequent pelvic peritonitis. Pain is more constant than in any of the varieties of genital tuberculosis considered thus far. It is periodical, localized, though at times diffused, and is usually the reason for which professional advice is sought. Menstrual disturbances are not noticeable. Attention is called by some writers, especially Polano, to a rise in temperature characteristic of this variety. In three of his cases, there was a regular remittent fever, the morning temperature being about normal, the evening rising to 100.4°F.

Alterthum lays stress on the value of nodules palpable through the vagina or rectum. These vary in size from a pinhead up to a bean or larger, and are located in Douglas' cul-de-sac, on the posterior aspect of the broad ligament, the posterior wall of the pelvis, or in the paravaginal tissues. They are usually firm and are sometimes situated so close together that they give the finger the impression of a coarse rasp. Bulius corroborates the value of this sign, but adds that localized thickening at the isthmus is, as a rule, of gonorrheal origin.

In the cases of simple tuberculous infection of the tube, in which the fimbriated end is not adherent, which is the rule, there is a pronounced periodicity in the acts, accompanied by all of the manifestations of an acute infection of the pelvic peritoneum, viz., soreness, pain, nausea and often vomiting, elevation of temperature from 100° to 102° F., evidence of fluid accumulation in the pelvic peritoneum, great sensitiveness on vaginal examination,

with "boggy" sensation of the Douglas fold. This is very pronounced on rectal examination. The uterus and tubes are more movable than in gonorrheal salpingitis. The attack passes off in a week or ten days, to recur in three to six weeks. This periodic pelvic peritonitis, as I have demonstrated in operations, is due to the expulsion of tubercular debris from the tubes into the peritoneum. Unless one is careful in the analysis of the clinical history to note that the soreness precedes the pain, which is never the case in acute appendicitis, the case may be mistaken for one of recurrent appendiceal pelvic infection. The leucocytosis in these attacks is about the same as in pelvic peritonitis of other origin, varying from 12,000 to 18,000. I have never seen this pronounced periodicity except in the cases where the fimbriated end of one or both tubes was free, as illustrated in the following history:

Miss Florence B. Æt 26. Admitted to Mercy Hospital Sept. 21, 1900.

Family History.—Negative.

Personal History.—No previous illness, except a vaginal discharge which has been present as long as she can remember. This discharge was white and mucoid, until lately, when it became bloody, for which she sought treatment. During the last two years, she has had pain in the region of the ovaries, confined principally to the right side; also pain in the back.

Present Illness.—Eighteen months ago, she had an attack of acute severe pain in the lower half of the abdomen. She does not remember whether it was more on the right or left side. A few hours after the onset of pain, patient vomited, and there was a decided elevation of temperature. The lower half of the abdomen was sensitive to pressure; there was some bloating; the doctor did not state that there was fluid in the peritoneal cavity.

The attack subsided in ten days, but from that time she has had considerable soreness when she exercises or works hard.

She has had in all, five similar attacks, all of about equal severity and lasting about the same length of time. In one of these attacks her temperature reached 103° and the physician said there was a mass in the lower right side of the abdomen. This attack was more protracted than the others.

The last attack was five weeks ago. She completely recovered from this.

Examination.—Increased resistance over the lower abdomen on both sides. The sensitiveness, however, is more marked on the right side of the pelvis than the left.

Bimanual examination reveals a moderately fixed uterus; stiffened, but not infiltrated fornices, an increased resistance in the Douglas' cul-de-sac, with a nodular mass on the right side. The rectal fold of peritoneum is particularly sensitive and thickened. The tubes could be outlined as enlarged and fixed. The uterine discharge was not examined for tubercle bacilli, nor were inoculations made to determine the presence of tuberculosis.

Operation.—Incision through left rectus. Peritoneum congested; great vascularity on both parietal and visceral layers; considerable serous fluid. The tubes were adherent to the wall of the pelvis but easily detached. Some soft slimy adhesions between the intestines; appendix free from disease. One-half inch from the uterine cornua in each tube was found a firm caseous mass; secondary masses were located at intervals of $\frac{1}{2}$ to 1 inch out to the extremities; there was edema and ectropion of the fimbriæ and beneath the mucosa of the fimbriæ could be seen small white tuberculous foci; caseous masses protruded from the ends of the tubes. In the Douglas' pouch the tubercles were confluent; they diminished in frequency as the distance from the end of the tube increased. A few small deposits were found on the surface of the omentum. The tubercles were well defined and surrounded by rings of connective tissue, showing that the tissue was overcoming and encapsulating the tubercular infection. The tubes were removed; ovaries retained; small tubercles were studded here and there on the surface of the ovary, but none of the Graafian follicles were infected with tuberculosis, as far as could be seen. The tubes were removed close to the uterine cornua on the proximal side of the primary and most compact tuberculous nodule. The uterine cornua were not removed. The uterus was normal in size and showed no evidence of tuberculosis. The abdomen was thoroughly sponged and a rubber drain was allowed to remain for 48 hours. (This was a mistake and led to the formation of a ventral hernia for which I operated June 28, 1901.) On this date, ten months after the first operation, the abdomen was opened, the hernial sac incised, and a careful examination was made of the abdominal contents. Every vestige and manifestation of tuberculosis had disappeared. There were no adhesions; there were no enlarged glands; the stumps of the tubes could be recognized, covered over by cicatricial tissue. The ovaries were normal; the uterus was about the same size as when previously seen. In fact, the peritoneum appeared as a normal peritoneum and one could

scarcely believe without seeing, that such complete restoration of the peritoneum could take place after tuberculosis.

This is a striking case, as showing the power of the peritoneum to repair, after the source of supply of the tuberculous material is shut off, namely, the removal of the tube with its tuberculous mucosa. The mucosa of the tube containing it, reproduces tubercle and bears it into the peritoneal cavity, through the open fimbriated end.

June, 1903, patient seen for another illness and states that she has enjoyed perfect health since operation; has had no recurrence of pelvic pain or peritonitis. Menstruation is normal as to time and duration and is painless.

Relations to Menstruation and Sterility.—The cases of Orthmann and Williams show that tubal tuberculosis, even when bilateral, has no effect on menstruation, provided the uterus itself be healthy. In five of Polano's cases, menstruation was regular and not painful, yet the tubes were involved in all five and the ovaries in four.

Sterility seems to be the rule in this variety. Tubal tuberculosis evidently inhibits both ovulation and the ingress of spermatozoa.

Treatment.—The only treatment, according to the weight of evidence, is complete extirpation of the tubes, provided the general condition does not contraindicate. The abdominal route is preferable, as a clear view can be had of the diseased area; the diseased peritoneum can also be treated, and the possibility of a serous sinus less likely, than by the vaginal route. Most operators advise leaving the ovaries, or at least parts of them, to mitigate the inconveniences of the artificial menopause. Fortunately, this can often be done, since the ovaries are rarely interstitially diseased.

Seligman reports a case where lupus of the face and scalp of many years' standing healed up after extirpation of a tubercular tubo-ovarian tumor.

The uterus should not be extirpated with the tubes, unless there is pronounced evidence of disease in that organ. The routine removal of the uterus is a pernicious practice. The abdominal route should be the one of election as the intestines are frequently adherent to the tube and likely to be injured in the separation. This injury would result in a fecal fistula which, if it did not produce an immediate and fatal result, would be difficult, if not impossible, to repair. If both ovaries contain abscesses, one of them, at least, should be preserved by enucleating the abscess wall out of the ovarian stroma, retaining the latter. This is not so difficult to

accomplish as one would imagine, as the tuberculosis in the ovary is usually a single sac, that of a Graafian follicle enlarged, and is easily abated.

The reward for the conservation of the uterus and the ovaries is beautifully illustrated in the following case:

Della C. Æt. 9 years. Came under my observation May 10th, 1893. Gave a history of recurrent attacks of inflammation in the pelvis, extending over a period of four months. The last attack began six weeks ago and since then there has been a rapid accumulation of fluid in the abdomen, so that it is enormously distended. The patient was somewhat emaciated; hectic; the afternoon temperature ranged from 100° to 101.6°. She was not particularly sensitive to abdominal pressure. Hymen intact; utero-rectal fold of peritoneum thickened and sensitive. Diagnosis of tuberculous peritonitis made and section advised.

Operation May 14th. Pelvic peritoneum was studded with miliary tubercles; there were no intestinal adhesions, although the small intestine had here and there many miliary deposits. The tubes were enlarged to about the size of an adult index finger; the fimbriæ were free. The ovaries were not adherent to the tube, although the mesosalpinx was short and held the tube close to the ovary. Both tubes were removed to the cornua; both ovaries and the uterus were retained. This patient has since that time been perfectly well; has developed into a fine young woman. She began to menstruate at fourteen; has menstruated regularly and without pain or discomfort, and although ten years have elapsed and the operation was performed five years before she arrived at puberty, it had no untoward effect on her development, ovulation and menstruation and nervous system. This is quite a contrast to the results after the preuberty "pan" operations so frequently and unnecessarily resorted to at the present time. Drainage or iodoform should not be resorted to after the section in these cases.

(To be concluded.)

FETAL HEART MURMURS IN GRAVIDA WITH THE REPORT OF A CASE.

BY

HORACE G. WETHERILL, M.D.,

Professor of Gynecology and Abdominal Surgery, Denver and Gross College of Medicine; Surgeon-in-Charge the Woman's Hospital; Surgeon, St. Luke's Hospital; Gynecologist, the National Jewish Hospital for Consumptives, Etc.,

and

J. N. HALL, M.D.,

Professor of Medicine, Denver and Gross College of Medicine, Visiting Physician; Denver City and County Hospital, Etc.

In the *Archives of Pediatrics*, 1897, there appeared an article by Dr. Hall, in which was reported the detection of a fetal heart murmur *in gravida*. This was so strange and unusual, and made such an impression upon those who were unfamiliar with the possibilities of such an occurrence, that it was the means of leading to the detection by Dr. Wetherill of the case here reported.

Up to the time of the report of Dr. Hall's case in 1897, three cases were on record, "two quoted by Hochsinger and the third reported to the American Pediatric Society by Christopher, of Chicago." As there is a brief synopsis of these cases in Dr. Hall's article it will not be necessary to repeat it here, and as "Osler mentions, in his practice of medicine, that fetal endocarditis has been diagnosed *in gravida* by the detection of a rough systolic murmur through the abdominal walls," the condition is a recognized one and well established, though rare.

During the first week of November, Dr. Fred. H. S. Ames, of Denver, sent to the Woman's Hospital Mrs. A., the patient being pregnant and having menstruated for the last time February 25, 1903, which indicates that she was in the latter part of the eighth month of her pregnancy.

Since about the first of October she had been annoyed with excessive salivation, nausea and vomiting, and anorexia, and these had resulted in malnutrition, loss of flesh and great exhaustion from want of food and loss of sleep. The urine had been examined frequently by Dr. Ames with negative results, and his conclusions were verified by our findings at the hospital.

The condition of the patient was grave and she came to the hospital with the expectation that the induction of premature labor

would be necessary, but the administration of alkaline mixtures, cocaine and carbolic solutions, and a rigidly restricted diet so relieved the symptoms that it was concluded to wait for a time, it having been determined that the child was yet alive through feeling its motions and hearing the pulsations of its heart.

It was during this examination of the heart sounds of the fetus by Dr. Wetherill that the murmur was detected and it was clear, pronounced and unmistakable from the very first, and could be made out to be systolic in origin. It was heard two inches below and to the right of the umbilicus of the mother and was audible over an area of about three inches of the abdominal wall. By external palpation the presentation was found to be a vertex, O.L.A., the head lying rather low in the pelvis. The mother was 28 years old, a IV-para, and until October 1 had been as well as in her previous pregnancies. Dr. Wetherill forthwith called the attention of Dr. Cuthbert Powell to the murmur and he was easily able to confirm the diagnosis already made.

Knowing of Dr. Hall's case and of the interest this one would be to him in that connection, he was asked to see the patient, but unfortunately came at a time when the position of the child was somewhat changed, and the fetal heart sounds were very indistinct, and the murmur was not audible. Dr. Ames also had the same misfortune and on one or two days Dr. Wetherill could not find it, but with these few exceptions it was always easily to be heard over the area mentioned. Thinking we should have three or four weeks more in which to make a study of the condition Dr. Hall failed to come to the hospital again, and on the morning of November the 8th the amniotic fluid escaped spontaneously and this was followed by a rapid and easy labor in the afternoon. The child, a boy, weighed five pounds and four ounces, and aside from a slight cyanosis appeared normal in every particular, crying lustily as soon as he was delivered. Examination of his chest corroborated the diagnosis of systolic murmur previously made, but as it was now somewhat masked by the rapid breathing and crying of the child it was not as plainly or clearly heard as before delivery. The mother's salivation, nausea, etc., disappeared immediately after delivery, and she was able to take food and nurse the baby as with her previous children. The child was kept upon the right side, and but for the slight cyanosis was like other children. The mother and child left the hospital on November 19, the child being twelve days old and strong and vigorous for his age, though the murmur was unchanged in any

particular. Dr. Hall saw the child on the third day and his notes follow:

Dr. Hall's Notes:

The child was small, but fairly developed, and had a tinge of cyanosis, most notable in the extremities.

- The heart area was slightly larger than usual, especially to the right, the apex beat being feebly felt in 5th space. The sounds were normal, excepting over the pulmonic region, where a loud and rather harsh systolic murmur was heard. Although most prominent at the second left intercostal space next to the sternum, it was heard throughout the chest. At the region of the 6th dorsal vertebra it was perhaps one-half as loud as in front, and much louder than in any other part of the chest. No thrill was felt. The closure of the pulmonic valves could not be distinguished.

We believe this murmur to be that of congenital pulmonic stenosis, and to be the identical one heard during fetal life. An open foramen ovale normally gives rise to no murmur, and certainly not to one of this harsh nature, for there is no such difference in the tension in the two auricles as to produce a harsh murmur by passage of blood from one to the other. Thus Colbeck states: "Patent foramen ovale gives rise *per se* neither to symptoms nor physical signs of any importance."

A persistent ductus arteriosus may give rise to a systolic murmur over the upper third of the sternum, but, owing to the raising of the pulmonic tension to the aortic standard, because of the free communication between the two vessels, the pulmonic second sound is sharply accentuated,¹ and a marked hypertrophy of the right ventricle, owing to its increased work in supporting an aortic tension, is to be expected. A diastolic murmur also has even been found, believed to be due to regurgitation through the open duct.

In this case, we believe aortic narrowing should be excluded because of its rarity in fetal life, because of the position of the murmur to the left, and its transmission to the back.

In favor of the congenital pulmonic stenosis we have, firstly, its well known frequency. The lack of respiratory functions in the fetal lungs is not at all an argument against this explanation of the fetal murmur, for the pulmonic artery carries some

¹A case believed to be of this nature and also detected in utero was reported by Dr. Hall in the Archives of Pediatrics, 1897.

blood to the lungs, and much more through the ductus arteriosus to the aorta during fetal life, so that the murmur may as readily occur at the pulmonic orifice before birth as after.

The transmission toward the 6th dorsal vertebra is a strong point in favor of the pulmonic stenosis. Dr. Hall has, in two recent cases, seen with Drs. Love and Steeves, noted the loudness of the transmitted murmur at this point. The absence of the pulmonic second sound is frequent in this lesion, for the same deforming process which produces the stenosis stiffens the valve cusps so that they do not close in normal way, and, further, the pulmonic artery is not sufficiently well filled, because of the stenosis, to cause the valves to close sharply even if normal. Regurgitation is not commonly found even though the valves be seriously damaged, for this same reason. The tendency to cyanosis is readily explained by the difficulty in getting blood to the lungs for aeration. It is quite likely that an open foramen ovale may exist, a patent ductus arteriosus or an imperfect septum ventriculorum, as is so often the case in connection with pulmonic stenosis, but we have no clinical evidence pointing in these directions.

Hochsinger¹ says: "An abnormally weak second pulmonic sound associated with a distinct systolic murmur is a symptom which in early childhood is only to be explained by the assumption of a congenital pulmonic stenosis, and possesses, therefore, an importance from the point of differential diagnosis which is not to be underestimated."

It is probably not too much to say that we may occasionally, in older children or in adults, affirm the presence of a stenosis in the pulmonary artery above the point of origin from the presence of dullness along the right edge of the sternum above the second interspace, due to the dilated first portion of the artery. Dr. Hall has recently seen a case apparently justifying such a conclusion. It would be out of the question to so refine the diagnosis in a small infant.

Occasionally the murmur is transmitted to one side of the back more forcibly than to the other in cases of the kind just mentioned, justifying us perhaps in stating that the narrowing affects most that branch of the pulmonary artery upon the side of the louder murmur. In the case spoken of Dr. Hall found the murmur over the left lung perhaps twice as loud as over the right. With the evidence of a dilated first portion of the pulmonary artery of which we have spoken the conclusion that the left branch was more involved in the stenotic process was a reasonable one.

¹Die Auscultation des kindlichen Herzens.

SUPRAVAGINAL AMPUTATION FOR FIBROID TUMORS.¹

BY

HERMAN E. HAYD, M.D., M.R.C.S. ENG.,

Buffalo, N. Y.;

Surgeon to the German and German Deaconess Hospitals.

THE gradual development of the present operation of hysterectomy for fibroid is a very interesting study, and, like many other surgical procedures, it was stumbled upon, and then practiced by different operators; and gradually, by a process of evolution, it has attained its present satisfactory and magnificent position. It was Dr. Ephraim McDowell, of Kentucky, who made hysterectomy possible when he performed his first successful ovariectomy in 1809. There was then created a necessity for the differential diagnosis of ovarian cyst and solid tumors of the uterus, because for a great many years ovariectomy was the only justifiable surgical undertaking; in fact, the abdomen was frequently opened under a mistaken diagnosis, and, finding a tumor of the uterus, the operation was abandoned, and the wound closed. The history of the development of this operation to the almost perfect technique of the present time, would be incomplete without first paying tribute to the early pioneers in this great branch of surgery, who, under the most disadvantageous circumstances, gave us practically the operation we are doing to-day.

To Clay, of Manchester, England; John Bellinger, of Boston; and to Burnham and Kimball, of Lowell, Massachusetts, we must give great praise. Kimball did the first successful hysterectomy on September 1, 1853, and made a correct diagnosis before the operation was undertaken. Burnham had operated successfully in June, 1853, but under a false diagnosis, having opened the abdomen for an ovarian tumor, and finding a fibroid uterus, removed it successfully. The operation they did was practically the operation we are advocating to-day, excepting that they left the lower end of the abdominal wound open to permit the escape of the long silk threads which were left attached to the stump of the tumor. With the accession of anesthesia, together with the triumphs of modern surgery, the aseptic treatment of wounds and the employment of safe and absorbable ligature materials, refinements of

¹Read before the American Association of Obstetricians and Gynecologists, September, 1903.

technique have resulted, so that the crude operation of Kimball is now developed into one of scientific precision and exactitude.

Apart from the dangers of sepsis and those accidents which are always possible when operating in the vicinity of the viscera, hemorrhage was the chief anxiety on the part of the surgeon, when the stump was dropped back into the peritoneal cavity. Various devices were employed to meet this danger. Elastic ligatures were applied tight about the neck of the raw cervix, and left *in situ*; and finally the stump was pulled forwards, and in various ways was fastened to the lower end of the abdominal wound by different kinds of mechanical appliances; and thus the stump was treated extraperitoneally, so that any subsequent complication incident to it could be effectually controlled.

Koeberle, by means of his *serre neud* and the low mortality associated with his operation, gave a new impetus to abdominal hysterectomy; and his work was soon supplemented and popularized by the splendid results of many of his followers; and, chief among them, our own Joseph Price, who is to-day the greatest exponent of this method of removing the uterus for fibroid, and, strange as it may seem, about the only great surgeon, in this country at least, who still clings to that practice of disposing of the stump.

It is surprising to see how slow we have been to take advantage of the knowledge which anatomy gave us so many years ago. Men had dissected the broad ligament and mapped out with exactitude the blood supply of the uterus time and again; yet it was not until 1889 that any practical application was made of that knowledge. Dr. Stimson, of New York, revolutionized the whole field of uterine surgery when he demonstrated that by tying off the two uterine and the two ovarian arteries, complete hemostasis of the uterus could be accomplished. The broad ligaments are now tied off in sections, and the individual vessels are caught again separately, so as to make security doubly certain; and, finally, any little raw oozing surface is sewed over with a catgut suture. The uterus is deperitonized, anteriorly and posteriorly, and sufficient flap is taken so as to cover over the raw cervix after the uterine body with its tumor has been amputated. The vessels are tied with catgut, and the two folds of peritoneum are brought together by a running suture over the stump, and thus the peritoneal cavity is closed off, and an extraperitoneal disposition of the stump is accomplished. And then the anterior abdominal wound is closed with perfect safety, and without subsequent anxiety.

Stimson's idea was taken advantage of by Baer, of Philadel-

phia, who reported, in 1892, nine successful supravaginal amputations for fibroid tumor without a death. He paid no attention to the os. It was neither sewed up nor treated with cautery or any species of disinfectant or caustic. The wisdom of his procedure has been borne out by the results of the bacteriological laboratory, which has shown us that the body of the uterus contains no infecting organisms, unless they have been introduced previously by violence and other forms of traumatism; and clinically we are all able to report uninterrupted convalescence and recoveries after all kinds of complicated supravaginal operations, without paying any attention to possible infection from without through the open os. In fact, most of us believe that all means directed to disinfecting the canal are quite unnecessary, and are apt to invite infection and subsequent formation of pus.

So far as any other measures are concerned for the cure of fibroids, they are simply to be condemned. Electricity once promised so much, but the dangers associated with its employment, even in careful hands, are as great as operation would be under the same favorable circumstances.

So with ligation of the uterine arteries, the benefit is so transitory and so uncertain that this procedure should never be undertaken, at all events only under the rarest circumstances.

The operation for the removal of the ovaries to stop the further development of the fibroid is too uncertain. Years ago, when the dangers of hysterectomy were so great, such makeshifts were permissible, but hardly now, although there is no doubt that complete removal of the ovaries and tubes has caused diminution in the size of the tumor and a cure of the painful and dangerous symptoms, especially the hemorrhage. Therefore, in certain cases, where the element of time is great, and where the dangers of chloroform become manifest and the life of the patient is in great risk, we can be content to quickly remove, thoroughly and completely, both tubes and ovaries, with the expectation, although not with certainty, of relief and possible cure.

Supravaginal amputation has such a small mortality, not more than 5 to 6 per cent., with all kinds of cases, complicated as they so often are with hydro-, hemato- or pyosalpinx, that we can in good faith to ourselves and our patients' welfare recommend it when once we are satisfied that the tumor is progressing in size and its symptoms are demanding active treatment. I am, however, of the opinion that over-conservatism is even more dangerous than extreme radical surgery, as we see, every day, patients depleted from frequent floodings, and die of some simple intercur-

rent disease, because self-resistance was reduced to a minimum, or pressure symptoms were left unrelieved until dangerous complications were excited in bladder, ureters and kidneys.

Again, the menopause, which often brings about an abatement of the symptoms, and the tumor even shrinks in size, has its dangers, because it is at this time that various forms of degeneration set in, sphacelation and necrosis, abscess, and even malignancy. Dr. Noble, of Philadelphia, has written a great deal on this interesting subject, and I have taken much of this paper from his work. He reported two cases of fibroid; one in a woman of seventy and another in a woman of sixty-seven, which had been dormant for years, suddenly undergo degenerative changes; and the formation of pus and death resulted in an effort to give relief. However, every uterus need not be removed because it contains a fibroid, even if of large size, when it produces no special symptoms. Nor does the presence of a myomatous tumor, even in a pregnant uterus, necessarily demand operative interference, as many of these women go on to term and through delivery without any trouble, because the tumor is often lifted up in the growth and development of the uterus, and thus offers no impediment whatsoever to the incoming head and its expulsion. Nor should every uterus with a fibroid be sacrificed when it becomes pregnant, as conservative operations can be often done upon them without causing premature labor or abortion.

In a paper written by Emmet, in the *American Gynecological and Surgical Journal*, June, 1900, he reports nine cases where myomectomy was performed on the pregnant uterus without inflicting any injury, and without causing premature expulsion of the ovum. When the tumor is situated low down in the pelvic outlet, and will of necessity be an obstruction to delivery, it should be removed early; but the exigencies of each case must be carefully considered, and the best route employed with safety to the mother first and her progeny secondarily, having in view, however, always the possibility of a later operation when the child is viable, or a Cesarean section at term.

The only other operations I have employed for the removal of the uterus for fibroid tumors is complete hysterectomy, or pan-hysterectomy, abdominal and vaginal. To my mind, the operation of total hysterectomy offers very few advantages. It is more difficult to perform, has a higher mortality, takes more time, and has increased dangers from hemorrhage, and it robs the vault of the vagina of the support which the cervix gives it. However, in

NO.	DATE	AGE AND NAME	CHARACTER OF TUMOR	SYMPTOMS	OPERATION	REMARKS	RESULT
1	Feb. 7, 1900	33 Mrs. K.	Very large hard intramural fibroid; few adhesions. Very short pedicle	Great pain in back and down legs	Supravaginal hysterectomy		Cure
2	Jan. 10, 1900	42 Mrs. G.	Large fibrocystic soft tumor, size of baby's head, extending into broad ligament, and mistaken for intraligamentary cyst. Complicated with large ovarian cyst size of football. Dense adhesions	Pain and inability to get about, and hemorrhage	Supravaginal hysterectomy after first tying off ovarian cyst		Cure
3	March 21, 1900	46 Mrs. C.	Large myocystoma of right and posterior side of uterus; felt like intraligamentary cyst	Great pain in right side, and hemorrhage and difficulty in locomotion	Supravaginal hysterectomy		Cure
4	Nov. 21, 1900	46 Mrs. W.	Large pedunculated fibroid from posterior and lower part of uterus, and filling up whole pelvis	Pain and inability to get about. For years a terrible sufferer. Bowel and bladder distress	Removed fibroid by myomectomy; bleeding was so active uterus was then amputated supravaginally, and in it were found smaller fibroids.		Cure
5	Nov. 30, 1900	29 Mrs. T.	Hard fibroid extending into right broad ligament, larger than one's fist; and smaller nodules size of potato on fundus. General adhesions. Operation very difficult	Great pain in back and sciatica. Was rapidly becoming a morphine habitué	Supravaginal amputation	August 28, 1898, I removed a left ovarian cystoma from this patient. At that time a small fibroid, no larger than an olive, could be felt on right side of uterus between folds of broad ligament. Another, not the size of a pea was seen on top of uterus. These subsequently grew to size seen at operation	Cure

Date	Age	Name	Diagnosis	Operation	Result
6 Jan. 12, 1901	36	Mrs. M.	Hard intramural fibroid size of two fists, and adherent cystic ovaries. Tubes closed	Supravaginal amputation	Cure, and no rupture to this day
7 March 1, 1901	40	Mrs. B.	Large intramural fibroid growing into uterine cavity without pedicle, and delivered with great difficulty	Supravaginal amputation	In this case the abdominal wall was sutured in layers with chromicized catgut. On the 17th day patient wanted the bedpan, and nurse could not go to her at once. She jumped up and broke abdominal wound. I found her two hours afterwards with some of the coils of small bowel protruding through wound. The wound was opened under chloroform, and again sewed together with through-and-through sutures. Since this case I have never relied on layer sutures alone in long incisions.
8 July 2, 1901	36	Mrs. Z.	Large sacular fibro-cystic tumor, nodular, and filling up cul-de-sac, and bound down by dense adhesions. Large hydro-salpinx of left tube, and right ovary size of fist. Cyst	Supravaginal hysterectomy	Cure
9 April 29, 1902	36	Miss Q.	Large intramural fibroid, reaching to navel. Delivered with difficulty. Incision carried above navel	Supravaginal hysterectomy	Cure

NO.	DATE	AGE AND NAME	CHARACTER OF TUMOR	SYMPTOMS	OPERATION	REMARKS	RESULT
10	May 30, 1902	47 Mrs. L.	Large intramural growing posteriorly	Great pain in back and legs and inability to get about	Supravaginal hysterectomy		Cure
11	Dec. 4, 1902	36 Mrs. B.	Large intramural filling lower abdomen, cystic and growing rapidly	Great pain and severe hemorrhages; very anemic	Supravaginal hysterectomy		Cure
12	April 9, 1903	32 Mrs. J.	Large multinodular fibroid. One large nodule was wedged into and filled up the whole pelvis, and pushed the cervix up against the bladder, so that the nurse could not pass a soft catheter into the bladder. There were a number of other nodules, from the size of a walnut to that of an egg and pushed well into the broad ligaments. The ovaries were much enlarged and so adherent that they were removed with the tumor. The tubes were very adherent and deep in the pelvis. They were delivered and tied off separately	Great pain and inability to walk or get about; even riding on the cars caused great difficulty in making water and bladder always contained residual urine; constipated bowels and bleeding piles—in fact the woman came to me for an operation for piles	Supravaginal amputation	In dividing off the anterior peritoneum low down I tore a small hole into the bladder. It was carefully sewed up. Operation was very difficult. Post mortem refused. Undertaker said he removed some urine-smelling fluid from peritoneal cavity when embalming body	Died on 3d day of septic peritonitis
13	April 29, 1903	40 Mrs. G.	Large intramural myoma. Uterus extended above navel	Pain and bleeding	Supravaginal hysterectomy		Cure
14	Aug. 26, 1903	38 Mrs. G.	Multinodular fibroid, one size of orange from anterior and right lateral surface of uterus, and a number of small nodules all over uterus	Pain and bleeding and irritability of bladder	Supravaginal hysterectomy		Cure

certain cases it should be the operation of election, when the cervix is the seat of marked cystic degeneration, or has a bad tear, and particularly if associated with considerable vaginal prolapse, or where, for any reason, drainage would be desirable.

The only case I lost of the group I am presenting in this paper was one I operated on April 9, 1903. It was an exceedingly difficult operation—a large multinodular fibroid, with its longest dimension placed anteroposteriorly in the pelvis, and wedged into the hollow of the sacrum so that it was extricated with great difficulty; and it pushed the bladder so far up and forward that the nurse could not pass a catheter into the bladder so as to empty it—our custom before such operations are undertaken. After the operation I drew off nearly a pint of urine with a metal catheter, and no doubt a large portion of this had been residual urine in a sacculated bladder. In separating the bladder, I tore a small hole into the viscus, low down and posteriorly, which I quickly and carefully sewed up. I felt reasonably certain that it would hold; but evidently it did not, because the patient died on the third day, and the undertaker told me that when he used the trocar for embalming purposes, a urinous-smelling fluid came out of the peritoneal cavity. A post-mortem examination was denied us. Had I done a complete hysterectomy and left the vagina open, and provided a gauze drain, I feel satisfied that my patient would have made a satisfactory recovery.

Statistics are worth something, and, although we often juggle with them to suit our individual preferences, they, nevertheless, represent a standard of work which must be taken for our guidance, and by which we must estimate the gravity and dangers of all operations. The mortality of supravaginal amputation, according to Noble's table, is 5.6 per cent., while that of total extirpation, in the hands of just as good a group of men, is 9.6 per cent. The work of individual men, even with the *serre neud* operation, is, of course, infinitely better than these figures indicate, but it would also be so if they did the supravaginal amputation and dropped the stump back into the peritoneal cavity. The suffering of patients is less, their period of confinement shorter, the dangers of subsequent hernia are reduced to the minimum, and a more beautiful abdominal scar results, and less danger of subsequent adhesions of bowel and viscera to the abdominal incision, with the future possibility of operation for strangulation and obstruction, and infinitely less wear and tear and labor for operator, assistants and nurses.

In this paper I could have gone into a discussion of the field for myomectomy and the questions concerned in the advantages of the vaginal over the abdominal route for certain fibroid polyps and small tumors of the uterus, but have been content to place myself on record as believing that the supravaginal amputation for necessarily operable fibroids meets nearly every indication demanded of the abdominal surgeon, and can be applied, and has been applied, to every conceivable kind of tumor, with short pedicle or long pedicle, tumors growing deep into the pelvis, or out into the broad ligaments; and with results which make it a clean and ideal piece of surgery, and is the operation of choice, excepting in those cases where drainage must be provided for, or where the cervix, for various other reasons, should be removed.

I append herewith a table giving a list of my supravaginal amputations, fourteen in number, with one death. The operation by preference I performed is that given us by Baer, and modified occasionally after the suggestions of Kelly and other more recent operators, when some special indication seemed to exist for their employment.

493 DELAWARE AVENUE.

MOVABLE KIDNEY WITH SECONDARY CYST FORMATION, RESEMBLING OVARIAN CYST.¹

BY

RUFUS B. HALL, M.D.,
Cincinnati.

In the cases reported in this paper the cysts had become so large that they filled the entire abdomen and pelvis and were regarded by the family physicians of the patients as ovarian tumors. When the patients came to the writer the appearance of the abdomen and the physical signs were exactly those of patients suffering from ovarian cysts of large size, yet upon investigation they proved to be kidneys that had been movable and later had become cystic.

The subject of movable kidney is always one of keen interest to men engaged in surgical work. Until recent years the almost universal opinion in the profession was that a movable kidney was not dangerous to the life of the patient and that this con-

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dition did not call for operative treatment until the patient suffered extreme pain or developed pyonephrosis. The present practice is not to interfere until compelled to do so by torsion of the pedicle, or some serious pathological lesion. While it may be conceded that only a small percentage of patients suffering from movable kidney have obstruction of the ureter, necessitating an operation for relief, quite a large proportion develop hydro- or pyonephrosis, and in a few more or less complete obstruction occurs.

Many of these cases suffer more or less discomfort in the region of the misplaced kidney. The pain, which is of a dragging, burning character, is not severe enough to necessitate an anodyne, yet is a source of great discomfort and annoyance. Some of these patients have pain all the time while they are in the standing position. Quite a large percentage of them are relieved immediately upon lying down. In these cases an operation for fixation of the kidney is of great benefit.

We have pointed out some of the leading symptoms of a movable kidney which are usually considered by the profession at large as not of sufficient importance to call for surgical relief. In the opinion of the writer a large percentage of these patients should be operated upon early, before they develop hydronephrosis. In all cases of movable kidney, with recurring attacks of hydronephrosis, the notable symptoms are scanty urine and an enlarged kidney caused by curvature or temporary twist of the ureter. They suffer acute abdominal pain which calls for anodynes for temporary relief. The gradually increasing curvature and obstruction of the ureter has a very marked effect upon the secretory power of the kidney, diminishing the secretion as the obstruction progresses until in extreme cases atrophy or cystic degeneration of the kidney may be the result.

In the cases of movable kidney coming under the writer's observation there have been recurrent attacks of hydronephrosis in the majority of instances. In studying the history of these cases we find that when the urine is unable to escape, it distends the pelvis and calices, causing destruction of the tubules and Malpighian tufts, and terminates in a cyst the walls of which are composed of the pelvis and the capsule of the kidney. This process requires many years before a tumor of large size is developed. If the patient is permitted to suffer and the condition is not corrected by operation, inflammation is likely to occur as the result of the obstruction. As the result of this we have a large hydro-

or pyonephrosis in place of the simple recurrent hydronephrosis.

The writer has observed several cases of temporary hydronephrosis with severe attacks of pain and a tumor as large as a cocoanut in which, after replacement of the kidney, the tumor would be suddenly reduced in size and there would be immediate relief from pain without the use of morphine. In all of these patients suffering from hydronephrosis with periodical attacks of pain, necessitating morphine for relief, examination of the urine will reveal more or less pus present. In three or four days after the attack has subsided the pus almost entirely disappears from the urine. Thus an examination of the urine between the attacks is often misleading. These are the cases in which an operation promises great relief. With our present perfected technique the operation is almost devoid of danger. If it is performed before serious pathological changes occur in the kidney relief is immediate and permanent.

The writer believes that the cases he reports were originally cases of simple movable kidney with recurrent hydronephrosis. As the disease progressed complete obstruction of the ureter occurred, with pyonephrosis. He has little doubt that if the patients had been subjected early to an operation for fixation of the kidney, that organ could have been saved and the long, tedious illness, with the severe operation at the end, could have been avoided.

CASE I.—Mrs. S. M., æt. 47, of Bellville, Ohio, was referred by Dr. Stofer (who had recently been called in the case). She was married at the age of 21 and is the mother of eight children, the youngest nine months old. The tumor was first observed after the birth of her first child who is now twenty-five years old. At that time it was in the upper right half of the abdomen and appeared to be about the size of a small cocoanut. The tumor remained about the same size and caused but little discomfort until her fifth pregnancy. During this gestation the tumor increased in size until it was as large or even larger than the uterus at full term. After the birth of this child (in November, 1891) the tumor increased in size very rapidly and the patient was very ill. During this illness, two weeks after delivery, the tumor was tapped for the first time and six gallons of straw-colored fluid were removed. After the tapping the patient's health improved rapidly and in about three weeks she was able to resume her ordinary household duties. The tumor soon appeared again. It

gradually refilled and the tapping was repeated once or twice each year afterwards. At each tapping three or four gallons of fluid were removed.

One interesting feature in connection with the history of the case is that she bore three healthy children after the tumor was first tapped. It was always necessary to tap the tumor within two or three weeks after each delivery as it rapidly became so large that she demanded relief. Each time after the tumor was tapped she had several months of comparatively good health. There was no accident following the tapping until in April, 1899. After about three gallons of fluid had been withdrawn there was severe hemorrhage into the tumor, the blood flowing through the trocar, and the patient went into collapse. She recovered promptly from this and bore one child afterwards. She was tapped two weeks after the birth of her last child but developed fever immediately afterwards. This fever never entirely subsided until after the tumor was removed. She was obliged to wean the child on account of her illness. The tumor did not increase in size as rapidly as on previous occasions but the abdomen was always exceedingly sensitive to pressure during this illness. The patient became anemic, lost flesh rapidly and had night sweats.

When she came under my observation, September 2, 1901, her pulse was 130, her temperature 100 to 101, her weight 90 pounds, and she was profoundly septic. Her former physician had always regarded the tumor as ovarian and had frequently advised an operation for its removal, but as the patient had learned that she could be made comfortable by tapping, with scarcely any pain, she had refused an operation until the present time when she and her family became convinced that she would soon die if the tumor was not removed.

Examination revealed the abdomen somewhat larger than that of a woman at full term of gestation. The tumor was elastic, apparently thin-walled and fluctuation could be elicited over the entire tumor which filled the abdominal and pelvic cavities. The physical signs on palpation and percussion were those of an ovarian cyst, but the clinical history did not coincide with that diagnosis. Examinations of the urine, made repeatedly, were negative. There was no sugar nor albumin present. The specific gravity was 1020, but there were only 42 to 44 ounces excreted in twenty-four hours. There was no swelling of the feet or legs. There had not been any swelling at any time in her past history. Vaginal examination revealed the uterus of normal size but retro-

verted and pushed down by the tumor until the os presented at the somewhat relaxed vulva. The tumor was more prominent on the patient's right side and in the upper part of the abdomen than in the lower.

The patient was admitted to my private hospital September 2, 1901. After having her under observation a few days and getting her clinical history, there was every reason to believe that the diagnosis of ovarian cyst was to be questioned. It appeared certain that something wrong in the tumor was causing the sepsis, Tapping the tumor for relief did not suggest itself favorably to the writer. From the clinical history it was evident that the kidney on the right side was involved, but the writer at that time had never seen a kidney as large as this tumor.

An operation for removal of the tumor was advised and performed September 6, 1901. The abdomen was opened in the median line for a distance of four inches so as to be able to get the hand inside the abdomen for exploratory purposes. The tumor was not adherent to the anterior abdominal wall. It was easily determined that the uterus and ovary were not connected with the tumor in any way and were perfectly normal. The incision was enlarged upward to two inches above the umbilicus. The colon was found glued to the tumor and it was easy to determine now that the tumor was retroperitoneal. It was tapped to the right side of the colon with a Tait's large-sized trocar and three and a half gallons of thick, pea-green colored pus removed. Every precaution was taken not to soil the peritoneum. The opening made by the trocar was closed by pressure forceps, the peritoneum divided along the anterior wall of the tumor for a distance of about twelve inches and enucleation of the sac commenced. This was accomplished without tearing through the wall of the cyst and with surprisingly little hemorrhage. The pedicle, consisting of renal vessels, was ligated with catgut. The ureter was ligated separately and the tumor removed. There was now an enormous space denuded of peritoneum. An opening was made through the loin and through this a rubber drainage tube was introduced. As there was general oozing over the raw surface, a strip of gauze was packed into the cavity left by the removal of the tumor and the end carried out through the opening in the loin alongside of the rubber tube. The peritoneal edges covering the tumor were closed by a running stitch of catgut. The gauze pads used to protect the viscera were found not stained. The abdominal wound was closed without drainage. The patient

suffered profound shock, rallied very slowly and at the end of twelve hours the pulse was 140 and temperature 101. Convalescence was established on the third day. All the gauze was removed on the morning of the fourth day. The drainage tube was kept in place for a week. The wound at the drainage site closed at the end of the third week and the patient left the hospital on October 5th, thoroughly convalescent. She gained rapidly in strength and within a few months had recovered her former weight of 165 pounds. She is now enjoying the best of health.

CASE II.—Mrs. W., æt. 66, of Greenup, Ky., was referred by Dr. Brady. She is the mother of seven children, one pair of twins who are 34 years old. The tumor was first observed soon after the birth of the twins. She had considerable trouble with her kidneys during this gestation, with frequent desire to empty the bladder. She passed great quantities of urine at times and a diminished quantity at others. When she first observed the tumor it was about the size of a quart cup and was situated in the left upper quadrant of the abdomen. It was elongated, very hard and not very tender. The tumor remained about the same until the latter half of a subsequent pregnancy, about two and a-half years afterward, when it apparently disappeared. She went through the gestation without any great amount of disturbance. After she was delivered she again noticed the tumor. It remained about the same size as the first time, but apparently softer to the touch, until her last pregnancy. The tumor disappeared during the latter half of this gestation. She had considerable disturbance from her kidneys. Her feet and legs were badly swollen. During the last months of pregnancy she had great stomach derangement with excessive vomiting. After this delivery she again noticed the tumor. It was somewhat larger than before but did not cause great inconvenience. The swelling of her feet and legs disappeared soon after her delivery. She passed through the climacteric period without much trouble and with very little disturbance from her tumor. After the menopause the tumor gradually increased in size from year to year but did not cause any great pain or disturbance, except from its size, until January, 1901. At that time she was called to the bedside of her son and daughter-in-law who were both down with typhoid fever. She stayed with them five or six weeks, helped to nurse them and did a great deal of hard work.

The tumor at this time was about as large as a full term gestation. In about four weeks she developed fever and was quite ill.

The physician, supposing that she had contracted typhoid fever, sent her home, and her nephew, Dr. A. S. Brady, was called to see her. After he had had her under observation for three days he was convinced that the fever was of septic origin and that her tumor was the source of her trouble. He regarded the tumor as probably ovarian and advised an immediate operation for its removal. The operation was opposed by the family, and the patient absolutely refused to be operated upon. She grew rapidly worse and the tumor enlarged at a very rapid rate. She became very anemic. The fever ranged from 103 to 104 and her pulse was 120 to 130 per minute and very feeble. She had violent sweats and all the symptoms of well marked sepsis.

On April 10th, three weeks after her illness commenced, the doctor told the patient and her friends that she must be operated upon at once or she would die in a few days. She then consented to the operation and the writer was sent for. The general condition was that above described. The patient could not retain the blandest nourishment in her stomach. She vomited frequently. This had continued for a week or more. She was greatly emaciated. A radical operation for removal of the tumor at that time, in her condition, would prove fatal. On physical examination the tumor was found to be larger than a full term gestation. Dulness extended over the entire tumor on the left side clear to the spine and from the ribs down. The tumor filled the pelvic cavity, pushing the cervix down to the vulva.

I was in doubt at that time as to the nature of the tumor. It was tapped on April 10th and three and a-half gallons of milky-colored pus removed. It was now evident that the tumor was a pyonephrotic kidney. It was agreed that if the patient survived the tapping and her condition improved we would remove the tumor. She improved rapidly after the tapping, the fever subsided, and for a half a year or so she was comparatively comfortable without pain and without sepsis, but the tumor commenced to refill so that it could be noticed at the end of a week. It increased in size rather slowly at first, then after a few months more rapidly until it reached its former size.

After she got up she again refused to have the tumor removed and would not consent to it until she again developed sepsis. After three or four months' illness her condition became so desperate and her suffering so great that she could no longer endure it. She then consented to be moved to the city, and entered the Presbyterian Hospital November 10, 1902. Her condition was

very desperate. She had all the symptoms of sepsis well marked—high temperature, rapid pulse, frequent vomiting and diarrhea.

From the fact that she improved so rapidly after the previous tapping it was decided to again tap the tumor and let her again recover from the septic condition before operating upon her. This was done November 11, 1902, and about three gallons of pus were removed. At once her symptoms all improved; not so rapidly as after the previous tapplings, but within four days her irritable stomach subsided, her temperature went below 100 and her pulse had improved in volume. The night sweats stopped, and her appetite returned but the tumor began to refill.

The operation for removal of the tumor was deferred until November 18th. The incision was made in the middle line, extending from three inches below the umbilicus to three inches above. The tumor was exposed and tapped to the left side of the colon. About one and a-half gallons of pus were removed. The viscera were well protected by gauze pads. As in the previous case, I divided the peritoneum over the tumor and commenced enucleation with the hope of separating the sac without rupturing it. Enucleation was much more difficult in this case than in the former one. It was almost impossible to separate the sac from the adjacent tissue in many places. By manipulation it could easily be determined that there was still some pus in the sac. When it was almost entirely enucleated the sac gave way and the pus, amounting to two or three ounces, was spilled, contaminating the wound back of the peritoneum but not getting inside of the peritoneal cavity. The sac was laid open and thoroughly mopped out with gauze and the parts were cleansed as thoroughly as possible. The sac was then enucleated completely, the renal vessels and ureter were ligated with catgut and an opening was made through the loin for drainage. There was very profuse oozing over much of the denuded surface. The same technique was carried out as in the previous report in reference to packing with gauze and placing a drainage tube. The peritoneum was closed with a running suture of catgut and the abdominal wall was closed in the usual manner without drainage. The patient rallied within two hours, had a slow but satisfactory convalescence, went home in the sixth week after the operation and is now thoroughly well.

THE CHLORINE TECHNIQUE.

BY

DOUGLAS H. STEWART, M.D.,
New York City.

THE acetic chlorine solution has thus far met every demand made upon it. Although planned solely as an aid in obstetric work, it has appealed strongly to surgeons. Therefore, inquiries abound.

For the benefit of those who have not yet seen it in use I would say that after five months of thought and several thousand culture tests covering more than twenty methods of hand sterilization, it seems to me that the very best disinfectant is acetic acid, two teaspoonfuls; calx chlorinata, four teaspoonfuls, and one quart of cool (70° F.) sterile water.

Five minutes' scrubbing with this after five minutes' proper mechanical cleansing has always prevented the growth of streptococcus, staphylococcus and *Bacilli Communis coli*, after the hands were intentionally contaminated with those germs (pure cultures). Clinically, several surgeons who are using this solution which is jokingly called "Stewart's juice," have found it all that could be desired, and the hands of operators and assistants are no longer sore. The laboratory results of the mixture as compared with bichloride and other techniques have been thoroughly elaborated elsewhere. It suffices to say only that in practice it is a good working rule to consider the antiseptic power equal to 1-500 corrosive sublimate.

Acetic acid is used because it is unirritating, common and cheap. It is applied in the autopsy room as a safeguard against hand infection. Chlorine does not escape from the acetic solution very readily, since acetic acid, calx chlorinata and water form hypochlorous acid.

As this hypochlorous acid is one of the surest bleachers, antizymotics and antiseptics known, it would be most natural to use it in its own proper form were it not for the unfortunate fact that it can only be preserved on ice or in a refrigerator. Acids in powder form do not do the work. Citric and tartaric are decomposed by oxygen, and this solution is nascent oxygen, per-

naps plus peroxide of hydrogen. After going through the acid scale the choice remains between sulphuric or acetic, and surely it is not difficult to choose.

Every man who has made a suggestion has considered sal ammoniac first. Chlorine with ammonia salts may give us nitrogen chloride and sudden death. An experiment suggested by various chemists is to put a few drops of nitrogen chloride on a heavy lead plate and push a piece of soap or other fat into them and see what an explosion follows. The lead is commended because iron or other material flies about in pieces. The pushing should be done with a fishpole.

Aq. ammonia 10 per cent. can be used, but it is quite as difficult to carry as the acid, and its technique is most irritating to hands, eyes, nose and throat. A fluid in a satchel is a nuisance, but the flask known as a "pocket-pistol" is easily obtained, filled with acetic acid, labeled and carried in the hip pocket.

As to gloves, their value is lessened by a non-sterile vulva, and experience leads one to think that a sterile glove finger is a better carrier of contagion than an antiseptic hand. Both will be contaminated by passage through the vulva, but theoretically the sterile rubber furnishes the better soil for germ growth.

To destroy the germs on the vulva make the solution and dilute it with two additional parts of water. Soak a piece of absorbent cotton in this and stop the ostium vaginæ. With two quarts irrigate mons veneris, open vulva and flush that. With the other quart and proper swabs use friction in every suspicious corner. Your enemies may be said to increase in millions with every half inch of progress. Thus, schematically speaking, one germ on the mons has fifteen million allies at the anal opening.

When the work is complete remove the protecting plug from the vaginal mouth. Your patient is much safer if you do not wash the vagina nor follow your antisepsis with sterile water. Let the solution dry as it will. About one in fifteen cultures will take after the washing. In eighteen attempts, after three washings one hour apart, all were negative. All the cultures taken before washing took well.

What this means may be imagined when it is stated that a pair of rubber gloves, boiled for fifteen minutes, and spread on a sterile plate, gave six cultures out of thirty attempts.

Surely this method of removing the danger of contagion from both hands and vulva promises to minimize the possibilities of puerperal infection better than any technique yet reported. And

all the time one has the comforting assurance that no poisoning follows its local use.

There are two well-known reasons for stopping the vagina and for leaving it alone. (1) It is commonly sterile. (2) It contains the natural lubricant requisite for parturition.

It may not be amiss to state that washing the hands in two tablespoonfuls of acetic acid mixed with a quart of water will remove the odor of chlorine very promptly.

NOTE.—Since the above was written I have been experimenting with sulphate of aluminium as a substitute for acetic acid. It certainly promises well.

121 WEST EIGHTY-EIGHTH STREET.

VERATRUM VIRIDE IN SURGICAL AND OBSTETRICAL PRACTICE.¹

BY
CHAS. L. BONIFIELD, M.D.,
Cincinnati, Ohio.

IN spite of all the knowledge of infection which the profession has acquired in the last quarter of a century from the laboratory work of the bacteriologist and the operating room and bedside observations of the practitioner, sepsis still claims many victims from the surgeon and a few from the obstetrician. Modern surgeons have bent all their energies to the prophylaxis of the disease. By the perfection of their aseptic technique, they have striven to prevent it, and left the treatment pretty much where they found it. The only change in treatment which has been generally accepted is the withholding of opium and free purgation as recommended by Lawson Tait. Questions of technique are still much discussed and operators still report series of cases to prove that their methods are at least as good as their neighbors; but it is doubtful if modern methods for the prevention of the introduction or liberation of germs are much to be improved upon, and it would, therefore, seem wise now to devote some time to the study of therapeutics of the disease; see what we can do for the patient who, notwithstanding our best efforts, has become infected. The aim of this paper is to call the attention of the Society to a drug which has proved valuable in my hands and in those of others in

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treating peritoneal inflammation, but which I believe is used for that purpose by only a limited number of the profession.

The physiological action of veratrum viride has been more carefully studied by Dr. H. C. Wood than by any other observer. He describes it as a cardiac and spinal depressant. He says that it produces sweating by its effect on the circulation, and that it increases the excretion of bile by causing severe vomiting. The most constant effect of veratrum, given in medicinal doses where its use is indicated, is slowing the pulse. The pulse, although compressible, is often full, and the heart sounds are distinct and clear. While it may be only by the vomiting that it increases the excretion of bile when used experimentally, certain it is, that bilious stools are frequently produced by doses that produce neither nausea nor vomiting when used for medicinal purposes. Clinically, veratrum will be found to be a stimulant to the liver, kidneys, skin and salivary glands. It relieves inflammatory pain and lowers temperature.

There are few diseases for which medical science has discovered specifics. In the treatment of most of them the attendant must content himself with assisting nature. He watches the course of the disease, gives such treatment as seems indicated controlling symptoms that in and of themselves are dangerous, conserving the patient's strength by securing for him sufficient rest and freedom from pain, as well as seeing that he is properly nourished, and that the emunctories are doing their duty.

Let us see how nature endeavors to cure infection in the peritoneal cavity, and what are the indications for treatment, and if veratrum meets any of them. Nature always attempts to treat peritoneal infection by keeping it within a limited area. This it can do if given time. If an appendix does not rupture until after it has been inflamed a number of days, an appendicular abscess is formed. Nature has welded together bowel, omentum and parietes with lymph manufactured for the purpose, making a wall beyond which the infection will not pass. When a Fallopian tube becomes infected, nature at once tries to bottle up the enemy by sealing the end of the tube; if unsuccessful in arresting the infection at this point, another effort is made at a more distant one. The desire to limit the infected area as much as possible seems never to be lost sight of. By thus limiting the affected area, sudden overpowering of the system by the absorption of poison from a more extensive area is prevented, and a large part of the peritoneum is left to perform the function of that membrane. The indications

for treatment would seem to be, to aid nature in localizing the infection, to sustain the vitality of the patient, to stimulate excretion, and to render the patient as comfortable as possible. In order that a broken bone may unite promptly, we immobilize it with splints; that an incised wound may unite, we hold the surfaces accurately together with sutures; that coils of intestines may be sealed together with lymph, peristalsis must be stopped, and the surfaces to be united allowed to remain quietly in contact. This was the rationale of the opium treatment of peritonitis as advised by Alonzo Clark. While the action of opium on the bowels is all that can be desired, there are serious drawbacks to its use. It arrests excretion by the kidneys, the skin, and the liver. Ochsner has taught the profession to arrest peristalsis by withholding the stimulus to it, *i.e.*, keeping stomach and bowels empty. The bowels having been immobilized in this way, veratrum meets every other indication for treatment. It sustains the heart by making its work easier; it stimulates elimination of poison by the liver, kidneys and skin; it lowers the temperature and relieves pain.

It is possible that veratrum also by its action on the circulation brings an increased army of leucocytes to the field of battle and in this way helps to destroy the invading army of germs.

In the treatment of appendicitis veratrum is not recommended to take the place of the knife. Almost every member of this Society believes that it is best to operate on every case of appendicitis during the first twenty-four hours, and with this sentiment the author is in hearty accord, but sometimes consent of the patient or family cannot be obtained, and too often the golden opportunity for an early operation has passed before the surgeon sees the case. These are the cases in which the Ochsner treatment is of great value, and to this treatment veratrum is a useful adjunct.

There is every reason for believing that the early removal of an infected tube would be as effectual in arresting the spread of the infection as is the early removal of the appendix when it is infected, but the tube is not a useless organ, and the conscientious surgeon dare not remove it until disease has so damaged it, that there is no hope of it ever being able to resume its function. In acute salpingitis, therefore, we can not resort to radical measures, but must employ such means as we possess to render the attack mild. Hot or cold applications, and other measures for influencing the circulation in the inflamed area, are much used and are

valuable, but the circulation can be much more profoundly affected by veratrum, and thus it is more valuable.

Here, again, veratrum is not recommended to take the place of surgery. When an abscess has formed it should be drained. When an abdominal section is indicated, it should be made; but the judicious use of veratrum at the proper time will lessen the number of cases in which these surgical procedures are required.

In the treatment of postoperative peritonitis, free purgation is of the utmost importance. Nothing can take its place. But there are cases in which after the bowels have been thoroughly evacuated, and the stomach has become settled, the action of the heart continues so exceedingly rapid that, if left alone, it will surely wear itself out before convalescence can be established. The most valuable agent that we have for slowing the heart in these cases is veratrum. It is infinitely better than strychnine or digitalis, because while they may urge the tired organ to work with renewed vigor, veratrum lessens its labor and gives it time to rest between beats. By stimulating the kidneys and other glands, it hastens the elimination of the poisons which are probably the cause of the rapid action of the heart.

In 1871 Fearn recommended veratrum in eclampsia and reported a number of cases successfully treated with it. Since that time it has been used by a large number of American practitioners, but I do not know of a single text-book that forcibly advises its use. Williams in his recent work only mentions it in the following words: "Nor have I ever used veratrum, so highly recommended by many American writers." Although it has been used for thirty years by a considerable number of practitioners, no fatalities have been reported from its use in this condition, and there are few who have used it boldly enough to secure the desired effect but will testify that as an agent for controlling the convulsions it is superior to chloroform or morphine or chloral, or any other drug commonly used for the purpose, and is also a powerful stimulant to the kidneys.

Although the exact cause of eclampsia is yet to be found, all will admit that faulty elimination on the part of the kidneys exists in most cases. This being true, a stimulant to the kidneys that is not an irritant is certainly indicated in the treatment. One can safely say that had this powerful remedy been first suggested by a Continental writer, instead of an American one, its use would have ere this been sanctioned by every text-book and tried by every practitioner who reads.

Veratrum is probably more used in Cincinnati than in any other

of the larger cities. This is largely due to the influence and teaching of Dr. Thad. A. Reamy, who was for twenty years Professor of Obstetrics in the Medical College of Ohio. Dr. Reamy used and recommended the drug with characteristic energy. He presented a paper on this subject to the American Gynecological Society in 1895 which is the best contribution on this use of the drug with which I am familiar, but which seems to have been largely overlooked by recent writers.

The preparation of veratrum which the writer has always used is Norwood's tincture. Where prompt effect is wanted, as in eclampsia, it is best given by deep subcutaneous injections. This is also the proper way to give it when the stomach is irritable, or in treating appendicitis, when one wants to keep the stomach empty. It produces some irritation at the point of injection, but I have never seen an abscess. The dose varies from five to thirty minims, according to the size and age of the patient. It is safer to begin with a moderate dose of ten or fifteen minims and repeat it often enough to obtain the physiological effect. The toxicity of the drug is greatly overrated by the rank and file of the profession. Dr. Wm. Gillespie, a prominent obstetrician of Cincinnati, gave his own child, 9 months old, 9 minims of Norwood's tincture by mouth, when threatened with convulsions, with only the most gratifying results. Dr. H. C. Wood says: "I believe veratrum to be the safest of all cardiac depressants." Veratrum is not more appreciated, because it is often prescribed in doses that are too small to be effective.

When it is being given hypodermically, after the proper quantity for twenty-four hours has been ascertained, it should be given in three doses eight hours apart to avoid the discomfort of frequent injections. To obtain the proper results, the pulse should be kept down to between ninety and one hundred when using it for peritonitis; lower for eclampsia.

A patient under the influence of veratrum should not be allowed to rise up, but the nature of the maladies for which I have advised its use makes this caution almost superfluous. If a slight overdose is given, the foot of the bed should be elevated. It is said, that morphine hypodermically acts as a prompt and efficient physiological antidote. Whiskey is also recommended for the same purpose. I have never had occasion to use either.

For being led to use this drug in conditions other than eclampsia, the author is largely indebted to Dr. A. B. Isham, to whose paper published in the *New York Medical News* he would refer those interested in the subject.

OPERATIONS IN IMPERATIVE SURGERY IN PRIVATE
HOUSES: A DEMONSTRATION OF SURGICAL
TECHNIQUE.¹

BY

WILLIS G. MACDONALD, M.D.,
Albany, N. Y.

THE advantages of the well-equipped hospital for surgical work are so well understood by both physicians and the laity, that argument is no longer required. Yet occasions frequently present where operations must be performed in private dwellings, and under the most adverse circumstances in imperative surgery. Such conditions obtain in localities remote from hospitals, where removal, through lack of transportation facilities, or loss of time is impracticable. In order that surgical relief may be afforded in the emergencies of surgery occurring in mountain camp or remote summer resorts in villages away from railroads, and where the condition of the patient will not permit removal, the surgeon must devise an operating technique which under adverse surroundings will allow him to complete aseptically the required operations and prevent sepsis as a factor in surgery. In abdominal surgery the following conditions in their order most frequently require operations in private houses: acute appendicitis, intestinal obstruction, strangulated hernia, peritonitis from perforation of the gastrointestinal tract, gastric duodenal and typhoid ulcers, extrauterine pregnancy and conditions requiring the Cesarean section, acute cholecystitis, gunshot wounds, and other acute abdominal disease of obscure or traumatic origin, but presenting symptoms immediately dangerous to life and demanding immediate exploratory incision.

To substitute practically the conditions of the hospital in the treatment of such cases as lie without the circle of the ambulance is the problem presented for our consideration.

Experience teaches very early that but little assistance is to be obtained as a rule in the home. The mental anxiety attending the critical illness of a member of the household unfits both friends and attending physician for the preliminary preparation for the operation, which naturally might be expected.

In a considerable experience it is the exception that a room

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has been prepared for operation, or sterile water provided. Sterilized utensils, towels, sheets and dressings are practically unknown unless a trained nurse has been on duty for a day previously.

To meet the exigencies of itinerant surgery nearly every surgeon has planned a more or less complete travelling operating kit, always in readiness for immediate use, varying in magnitude from a single handbag to one or two large trunks. One is as deficient



FIG. 1 represents a large room with painted walls and polished floor from which furniture and rugs have been removed save a chiffonier and two footstools. Household utensils are assembled in the room as provided by the list of articles required from the household, without reference to arrangement.

Note the leather cases on the kitchen table in the foreground representing the surgeon's kit, also the large agate vessels containing wash bowls and pitchers and rubber goods already under sublimate solution 1-1000.

as the other is immobile, the disadvantages are equal and both fatal to success or peace of mind. Whether it is worse to be handicapped by insufficient and unsuitable instruments and dressings or to wait six hours for the next train to bring your baggage delayed by stupid expressmen, I am unable to decide. A little perseverance, however, will develop an operating kit readily mobile, of not excessive weight, and amply sufficient for any emergency. The one shown you is the product of a practical

evolution in compactness gained through several years of active surgical experience. It is true that several utilities, such as traveling operating tables, basins and instrument stands have been discarded and that towels, sheets, suits, dressings, sponges and ligatures are all carried sterile instead of being sterilized in the home prior to operation. This method has advantages too manifest to require further demonstration.

To return to a more particular description the outfit will be observed to consist of two packages—an oblong leather bag of commercial size (17 x 12 x 10) and a leather cylinder. The contents of the larger leather bag contains the following articles, classified as:

General:

Two operating suits, including caps and aprons (wrapped and sterilized in autoclave).

One Kelly pad, two pure gum sheets (one yard by three-fourths).

One large pure gum irrigator.

Three pairs operating gloves.

One stomach and rectal tube.

One tube sterile vaseline.

One combination instrument sterilizer with instrument trays.

One quart sterile water in flask, sealed.

One saline infusion apparatus.

One package sterile salt capsules.

Skin Sterilization:

One razor.

Two sterile brushes (wrapped and sterile).

Two large gauze towels (wrapped and sterile).

One package green soap, U. S. P.

One package sublimate tablets (gr. $3\frac{1}{2}$).

One flask alcohol (95 per cent.).

One flask tr. iodine.

Anesthesia:

One ether inhaler, "Kocher."

Stronger ether 500 grm.

Ethyl bromide 50 grm.

Cocaine-adrenalin-chloretone sol. 50 c.c.

One hypodermic syringe with assorted tablets, morphia, strychnia, nitroglycerine and atropia.

One large cocaine infiltration syringe (Leur).

Instruments:

Scalpels, small assorted case, with hernia knife.

Three scissors, *sharp, straight* and *curved, blunt*.

Retractors, one pair medium angular.

Artery forceps, ordinary, one dozen; heavy, six assorted.
Forceps, long dressing, two; bullet two.
Intestinal clamps, ordinary, two; O'Hara's, one.
Murphy buttons, one full set.
One needle-holder; assorted needles.

Extras:

Threaded sterile intestinal sutures, in waxed papers.
Extra and special needles. Extra silk, catgut, silver wire.
Assorted drainage, glass (special) and rubber.
Irrigator nozzles.
Catheters, glass and rubber.
Rubber dam.

Dressing:

One package iodoform packing.
One package iodoform tamponade.
One sterile paraffine bandage (six inch).

The contents of the leather cylinder is an autoclave nickel container which is charged, sterilized and placed in leather cover for transport without contact and is only opened at the immediate beginning of the operation.

It contains:

One large gauze sheet to cover patient.
One package sterile towels (eight).
Three packages sterile tampons (six).
Two packages sterile gauze sponges.
One complete abdominal dressing with bandage and pins.
One tube each of silver foil, sterile silk and silkworm gut, sufficient for any ordinary operation.

The presence of the well-trained assistant, familiar with the operator's method is indispensable to satisfactory work, and a proper reference to his duties finds its place here. By the time the home of the patient is reached the assistant will have gained a sufficient knowledge of the case to estimate the probabilities of operation. He can during the time of consultation and examination be of much assistance in making reconnaissance of the house with a view to the selection of a suitable operating room and the sources of the improvised operating room furniture necessary. The operator informs his assistant at the earliest moment of the decision for operation. I usually do it by sending a request for the iodine which means operation to him. Parenthetically, I should like to speak of the use of the tincture of iodine in skin

disinfection in emergency surgery. I have been impressed with its utility as a rapid chemical antiseptic when applied to the skin, the value of which was impressed upon me by Prof. Kocher, some years since. It has become a practice with me to paint the field of operation freely a few moments prior to the preliminary table preparation of patients. I have not seen a stitch abscess since the employment of iodine in this manner.

This paper would not be complete without a brief description of the selection and arrangement of a room for the operation. If



FIG. 2 represents the final preparatory arrangement of the room, employing only the articles displayed in the preceding photograph. Note the use of the sheets as tarpaulins for all furniture. The chiffonier, covered, affords on its top a place for general supplies. The small table in the foreground shows instrument sterilizer and instruments. Operating-table fully prepared with Kelly pad and drains.

the operation is to be performed immediately, avoid all violent moving of furniture, or removal of rugs and hangings. Such bacteria as are present are peacefully resting with the dust on the furniture. An energetic housemaid with a dusting cloth can so bacteriologically vitiate the air that the danger of air infection becomes real for the following two hours. A part of the dust evil may be avoided in the selection of a room without carpets and as free as possible from decoration, hangings. Move furniture as little as possible and employ the methods of the fire protectives

in covering with clean sheets. Cover carpets under operating table with sublimated sheets tacked down. It may be stated generally, that the entire removal of carpets, furniture and hangings should only be undertaken, when an interval of at least four hours remains before the operation is to be undertaken.

In the meantime, your assistant has prepared the operating room and has assembled the necessary household furniture, and has given to all responsible members of the household the following printed slip:

Furnish at once all of the following articles, or as many of them as possible:

A kitchen table, or dining-room table, closed.

Three bedroom tables or wash stands without backs. Substitutes, center tables, sewing tables, or an ironing board, or a broad leaf from the extension table.

Three kitchen, or dining-room chairs of wood.

Flannel blankets (single 2). One comfortable.

Towels (12). Sheets (6 to 12).

Small basins or china bowls from the kitchen (1 to 4).

Two clean wooden pails, one filled with strained cold water, for sublimate solution 1-1000.

Substitutes for pails, clean wash tub (small). Large agate mixing bowls or infant bath tubs.

Sets, wash stand (1 to 4), only bowls and pitchers required; freshly washed.

Safety pins (1 to 2 dozen). One package carpet tacks.

(Separate here and give to a single individual to prepare.)

Water for operation, give it your first attention.

Hot, boiling thirty minutes and delivered in original vessels to operating room; quantity, three gallons.

Cold sterile, in original vessels or in sublimated vessels packed in ice; quantity, one to three gallons; prepared by boiling thirty minutes and cooling under cover.

Cold strained, strain through several layers of clean muslin; quantity, six gallons.

The surgeon having given the general directions for the patient as to clothing, evacuation of the bladder, and preliminary hypodermic stimulation, if required, makes a general inspection of operating room, gives such further orders as are necessary to complete the detail and changes his clothing. During the preliminary anesthesia the surgeon selects and sterilizes the necessary instruments, arranges them, and gives his hands a preliminary scrubbing.

The patient in primary anesthesia is brought to the table, placed on sublimated Kelly pad, extremities wrapped in flannel

blankets, and the field of operation isolated by sublimated rubber sheets. At this point the assistant is excused to prepare his hands for operation. During the continuance of the anesthesia the field of operation is further prepared by soap massage, shaving, scrubbing with hot water and soap five minutes; followed by washing with sublimate solution 1-1,000 five minutes and, alcohol sponging two minutes. While the surgeon completes the toilet of his hands, the assistant, already prepared, arranges the sterilized gauze sheets and sterilized towels for the operation.



FIG. 3 represents the table preparation of the patient by the surgeon. The nurse's duties are purely subsidiary, and can be performed by any intelligent person. Note the arrangement of Kelly pad and rubber sheets for the protection of the patient. The table in the foreground shows instruments in covered trays already sterilized.

The preliminary incision required by the operation is made, the necessary sponging being done with dry sterile sponges. With the completion of the preliminary abdominal incision the problem of protective tamponade presents itself, in order that infection may be avoided through imperfectly sterilized water, dry sterilized paraffine gauze has been substituted for hot normal salt solution saturated tampons. The paraffine gauze tampon is nonirritating to the peritoneum and protects surrounding tissues far better than plain gauze by preventing transudation of infectious material. I am familiar with the intraabdominal use of tampons wrung from

hot sublimate solutions advocated in septic cases by Deaver, Fowler and others. Having once abandoned the use with good reason, I think, of chemical antiseptics within the abdomen, I can not readily return to the practice. Temporary abdominal tamponade to be effective must be complete and painstaking besides; it must be undertaken before the infected area has been disturbed by unnecessary manipulations. Tamponade after pus is running is like locking the barn after the horse is stolen.

Doubtless the thought has occurred to many of you watching



FIG. 4 represents the final arrangements in detail and primary incision. The first assistant has a table containing sponges, tampons, and affords a supply of hot normal salt solution. At the side of the operator are the instruments, ligature and suture material. Details of operation not shown.

the demonstration that the method furnished abundant opportunity for the loss of gauze sponges and tampons; practically the accident has not occurred. The rule never to allow a gauze sponge to leave the hand except to be grasped by an instrument or thrown away is inflexible. The tampons are counted three times by different persons before wrapping and sterilization, are counted as used, and separately reassembled under the eye of the surgeon before the abdomen is closed.

The closure of the abdominal wound after imperative abdominal operations is frequently incomplete in cases requiring drainage or

permanent tamponade. Under such circumstances silkworm gut and the through and through method is, in my experience, the most satisfactory. In cases where infection can be excluded, the method of layer suture with Cumol catgut is to be preferred, except in incision involving the epigastric region, where the fascia should always be united by nonabsorbable sutures or aluminum bronze silver wire, silk or silkworm gut. Every effort should be made to avoid drainage in emergency surgery. It always, even



FIG. 5 illustrates an operation for acute appendicitis completed and the dressings applied. Lack of definition in the photograph does not fully illustrate the abdominal binder or its application, but shows generally the conditions prevailing at end of operation.

under the best conditions, affords opportunities for post-operative infection.

The abdominal dressing employed, consisting of plain gauze, gauze and cotton pads, is held in place by a many-tailed bandage, the application of which is sufficiently well known. The operation is completed.

The description already given demonstrates very fully the usual routine. Numerous departures are required on occasion. Vomiting, a very common symptom, in the conditions under consideration, is frequently a source of great danger during opera-

tion. Patients literally are drowned in their own vomit. A gastric lavage immediately before the anesthesia greatly benefits the patient, but cannot always be employed, especially in patients already greatly exhausted, in such cases local anesthesia is of peculiar value. Local anesthesia by means of cocain-adrenalin solution may be employed when general anesthesia is contraindicated. A cholecystotomy or enterotomy can be readily performed without pain by means of local anesthesia. Such anesthesia is the method of choice in strangulated hernia. Once within the ab-



FIG. 6 illustrates the improvised operating room ten minutes after the completion of the operation. Instruments are being cleaned and articles reassembled for packing and laundry.

domen, operative measures are not especially painful unless irritation produces peristalsis, or the mesentery is unduly pulled upon.

After-Treatment.—The operation completed, and the patient safely in bed, measures are taken for the relief of shock, if required, otherwise quiet is enjoined and a competent watch or nurse placed at the bedside with strict instructions not to leave the patient alone under any circumstances until consciousness is fully recovered. Neglect of this precaution is responsible for many cases of aspiration pneumonia and other avoidable complications. Owing to many misunderstandings in the subsequent management of cases, the following printed outline of treatment is left with the attending physician:

Suggestions for the After-Treatment in cases of Abdominal Surgery, Based upon some Considerable Clinical Experience.— (Not compulsory but advised as useful as a general guide.)

Shock.—Severe, associated with severe hemorrhage during the operation or distinctly lowered arterial tension from other causes. Saline infusion 1,000 c.c., to be repeated in four hours if patient is not greatly improved. Enemata, stimulating, of black coffee $\mathfrak{z}\text{ii}$, of whiskey $\mathfrak{z}\text{i}$ and hot normal salt solution $\mathfrak{z}\text{vi}$, every four hours. Adrenaline chloride gr. $\frac{1}{30}$, every hour or strychniæ sulph.



FIG. 7 illustrates improvised operating-room a half-hour after operation; the surgeon's kit is reassembled and illustrated in the foreground ready for transport. Blood and pathology, the offensive features to the lay mind, have been removed to the laundry or are in the surgeon's kit awaiting laboratory investigation.

gr. $\frac{1}{20}$ every four hours; external warmth. Moderate, saline and whiskey enemata $\mathfrak{z}\text{vi}$ every four hours alternating with strychnia sulph. gr. $\frac{1}{30}$. Slight, saline enemata $\mathfrak{z}\text{viii}$ every four hours (given chiefly for thirst).

Pain.—Give morphia sulph. gr. $\frac{1}{4}$ to $\frac{1}{3}$, before patient becomes very restless after operation. After immediate effects of operation have passed, avoid anodynes, if possible. Later pain means bowel distension or septic peritonitis, appropriate treatment given later.

Vomiting.—Vomiting during the first twenty-four hours, with-

hold everything by mouth, mustard to epigastrium, followed by icebag. Vomiting continued to second day lavage of stomach or cocain gr. $\frac{1}{8}$ in a teaspoonful of hot water every hour. Withhold all food and water and give, if improvement is not immediate,

Cocain Hydrochlorat. gr. i
 Codeinæ sulphat. gr. i
 Hydrard. Chlor. mite. gr. xii
 Bismuth Subnitrate gr. xxx

Ft. mass et div, in capsul, nr. viii.

Sig.—One every hour with little hot water. Follow the last capsule with milk of magnesia, half ounce every hour until bowels move freely.

Vomiting Absent.—Withhold all food for twenty-four hours. Give hot water very sparingly (no ice or lemonade).

Diet, First Day.—Fasting for twenty-four hours with small quantities of hot water. Adults may be allowed to wash mouth with cool water without swallowing repeatedly. Give saline enemas for excessive thirst.

Second Day.—Give clam or beef bouillon, liquid peptonoids, expressed beef juice or egg albumen.

Third Day.—Add matzoon, milk with lime water or peptonized, clear soups, cold or carbonated water.

Fourth Day.—The bowels having moved satisfactorily, add custard, cream, thick soups, boiled rice.

Fifth Day.—Light diet, unless Murphy button has been used, or a gastroenterotomy done, when liquid diet must be continued for a week. A return of nausea and vomiting should be treated by prompt withdrawal of food and attention to the condition of the bowels.

Distension.—Distension not associated with nausea and vomiting, give,

Acid carbolic m xxiv
 Menthol gr. ii
 Magnesii Hydrat. fluid. zii

Sig.—A teaspoonful in a little water every two hours; or, give a high ox-gall, or Epsom salts and glycerine enema.

Distension with vomiting lavage of the stomach, and the enemata already ordered.

The Bowels.—Give calomel in divided doses at beginning of third day (see nausea capsules), or earlier if indicated by vomiting or distension. Follow by saline, and if uneffectual by high enema, magnesia sulphat, \mathfrak{z} iv; glycerine, \mathfrak{z} iv; warm water. In-

struct patient to retain it as long as possible. Repeat treatment, as required, during first week, after which usual laxative may be used.

Urine.—Allow patient to void, if possible. Catheterize at 6-8 hour intervals, if required. Use every precaution in both sexes. Cystitis is a frequent and annoying complication during convalescence.

Drainage.—Glass, changing packing every hour, until secretion becomes less and serous. Great care to preserve asepsis must be exercised in changing the dressing. For the care of drainage employing rubber gloves and every precaution.

Substitute rubber for glass in — hours, providing drainage lessens and becomes clear.

Remove gauze drains in — hours; substitute rubber and irrigate daily.

Replace gauze drains by simple tamponade gauze in — hours.

Dressings.—In absence of wound drainage, leave primary dressing undisturbed for ten days, unless high temperature, after second day points to wound infection.

Posture.—After the first twenty-four hours, allow patient to assume, with assistance, any comfortable posture. It is safe.

Place elderly patients in a sitting posture as early as the fourth day if possible; danger, senile pneumonia.

General Observations.—Prohibit visitors save brief visits by near relatives twice daily for first week. Keep chest protected from all exposure, especially in the aged. Pneumonia is frequent and fatal complication in emergency abdominal surgery. Moderate fever of the second day may be expected after severe operations and is without danger. Remember that the operator has a lively interest in the subsequent progress of the patient and is ever ready to lend assistance by telephone, telegraph, or in person when all is not going well.

Further Suggestions.—The following circular is given to the nurse when an opportunity for preliminary preparation is afforded.

DIRECTIONS FOR NURSE, ON DUTY TWELVE TO TWENTY-FOUR HOURS
PRIOR TO OPERATION.

Supplies to be taken with nurse:

One slip, directions for nurse.

One slip, articles wanted household.

One razor.

One nail brush; green soap (5iv); sublimate tablets (100); alcohol, one pint; plain gauze, unsterilized, 25 yards.

On duty after preliminary instructions from attending physician if present:

Examine room selected for operation and have it stripped absolutely to bare floor and walls. Wash wood work and floor with sublimate 1-1,000. Walls, if painted, may be washed with sublimate solution otherwise brush carefully with moist sublimate cloths.

Assemble in rooms all articles on slip, articles wanted from household and have them thoroughly washed, with soap and water and sublimate 1-1,000. The wash bowls and pitchers may be placed immersed in sublimate 1-10,000. When preparations are completed air the room, then close all windows and lock the door.

Secure a clean wash boiler and fill with strained water and boil at night for thirty minutes; reboil in morning for same time and set aside five gallons in clean sublimated covered vessels to cool. This water may be immediately placed in operating room. Refill boiler and have heated an hour before time for operation. This will provide hot water for operation.

Give patient a general bath in tub or bed, as directed by attending physician, after enema and douche and dress in clean night clothing. Boil in suitable vessel or steam cooker, five one-yard pieces of gauze, and one five-yard piece of gauze folded as compress to cover entire abdomen. Massage abdomen gently with green soap, giving particular attention to the umbilicus and the folds of the groin for five minutes.

Shampoo with hot water and gauze sponges, for five minutes. Shave, including the region of the nympe in the female. Continue washing with water until all evidences of soap disappear. With fresh gauze sponge wash with sublimate 1-2,000, using friction for five minutes. Wash with alcohol and saturated large abdominal compress in sublimate 1-1,000 and secure in place by a many-tailed binder of muslin.

Give laxative under direction of attending physician. Calomel preferred. Give water freely during night, unless vomiting is present.

In early morning give a saline cathartic followed by a cup of hot coffee or strong tea. Two hours before operation, if bowels have not moved satisfactorily, give enema. Sterilize hands and remove abdominal dressing, saving large compress to reapply. If skin is not irritated, sponge again with alcohol and sublimate and reapply compress this time 1-2,000; readjust binder and dress

for operation in clean short flannel undervest, flannel drawers and stockings and muslin night dress. All general preparations should be completed an hour before the time of operation, in order that the patient may have the opportunity for quiet and rest. Just prior to anesthesia the bladder should be emptied voluntarily or by catheter.

The hour prior to operation should afford the nurse a brief moment for rest, and the opportunity of inspecting her general preparations. The hot water may be brought up in original vessel by servants in the house during primary anesthesia.

The surgical assistant will complete the arrangement of the operating room. During the operation the nurse will be in readiness to lend such assistance as may be required.

Have the bed freshly prepared for the patient with basins and towels at hand if vomiting occurs.

Follow the directions for after-treatment given by the attending physician.

With the usual remarks embraced in "in conclusion," I may be allowed to say that the system presented to you represents no newer fad of mine. The kit shown you bears the evidences of the stains of travel and is frequently formaldehyded. The cylinder has been my travelling companion for nearly ten years; the larger bag succumbs to the ravages of time and travel and the one shown you represents at least the third of a series, its immediate predecessor having withstood the demands of the Spanish-American War, although it saw little field transportation, yet with a little substitution it might well afford superior advantages in military practice where compactness and ease of transportation are first essentials. It appears to me, that a sealed and sterile container representing in a general way the contents of the container shown you to-day, prepared and sealed at a central government station and issued with medical supplies to armies in the field, presents with the employment of the dry method in surgery the highest probabilities of asepsis, in military practice. The field hospital presents practically few opportunities for the organization of asepsis. It presents many opportunities with aseptic materials at hand for doing complete work. The conditions of the civil surgeon in emergency practice are so identical with those of the military surgeon in many features that the comparison of their difficulties is inevitable. The sealed package of sterile surgical dressing and essentials for operation in military surgery has not commanded the attention of military medical

authorities that it should. The military surgeon, confronted by the necessities of an immediate abdominal section, would feel far more at ease in the presence of a sterile cylinder made of thin tin and hermetically sealed containing essentials for an operation than in the total equipment of the mobile camp. Success in the military surgery of the abdomen predicates special preparedness, in the way of operative facility, and the employment of dry methods of operating. The military surgeon of to-day should be able within an hour to place in motion all the facilities of the itinerant surgeon and with almost equal success. A single pack mule, properly loaded with a general operating kit upon one side, and dressing in sterile containers on the other side of the saddle, would afford abundant supplies for at least twenty-five laparotomies.

27 EAGLE STREET.

CONSERVATIVE SURGICAL TREATMENT OF THE UTERINE ADNEXA.¹

AUGUSTUS P. CLARKE, A.M., M.D.,
Cambridge, Mass.

THE successful results obtained in gynecic and abdominal surgery since the founding of this Society have served to deepen the impression of the surgeon and to lead to a greater perfection of the work which he has to undertake. In the earlier attempts at such important methods of relief, the chief object appeared to have been to free the patient from present suffering, or to overcome the too glaring deformity with which the patient was troubled, without having always full regard for the ultimate preservation of the integrity of the organs or other parts, or for restoring as far as possible their normal functional activity. The same tendency had long been seen in the surgeon's adoption of the more radical measures in cases of operative treatment of diseased or injured parts, as of a finger, a hand, an arm, or of a leg. The surgeon, instead of resorting to a mere resection or excision of the affected portion, had not infrequently recourse to complete amputation for insuring a more speedy cicatrization of the damaged tissues involved. The present sentiment of people and the changes that are now everywhere fast taking place in the mental constitution of the races, call for a greater discrimination

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to be made in the choice of the procedures to be adopted by the surgeon, as well as in those to be employed by the physician.

I might in this connection further say, that the views now taking place among all mankind are not likely to prove of an ephemeral or a transient order, for the hidden mysteries of nature that are fast being unfolded must inevitably exert an important influence on the surgeon in determining his methods to be employed for the patient's relief. The multiplicity of important financial, as well as the social, positions that woman is now being trained to fill, besides property interests that are bearing more and more on the marriage relation, will also have to be taken into consideration by the surgeon, that his patient may not gain the thought that she may become unfitted as a competitor for the prizes in the race that often seem not far distant before her. Without going further into a general consideration of this discussion of conservative methods of treatment, the following record of the management of cases is herewith presented.

The case of one patient was of a hitherto unsuspected tubercular condition of the Fallopian tube. The attack must have been of primary origin. There had been, from time to time, much severe pain along the genital tract. The patient had suffered also from severe dysmenorrheal attacks which could not be fully relieved by the ordinary methods of treatment, including rapid dilatation of the cervical canal and thorough curettement. Abdominal section showed that only a limited portion of the right Fallopian tube near its fimbriated extremity was involved. It was therefore deemed best to free the adhesions, straighten the tube, and to remove only the part that had become diseased. The incised surfaces of the peritoneal tissue were turned in and were sutured with material consisting of fine aseptic kangaroo tendon. Recovery was speedy, with complete relief from the painful symptoms.

One case operated on was that of a preternaturally long vermiform appendix, that had become adherent to the right ovary. There was a small ovarian cyst which was found in connection with the adhesions to the appendix ceci. This was removed with upward of one-half of the ovary. The patient recovered from the effects of the operation and was afterward free from pain and other discomforts. Two years later she married. She subsequently gave birth to a well-developed child (1901). The cause of the pain seemed to have been due to the adhesions of the vermiform appendix and the consequent dragging and to the inflam-

mation that had been set up about the seat of the cyst and the accompanying adhesions.

Another case presented itself, in which the left tube and ovary had to be removed on account of two adjoining cysts of granular formation; there was also on the right side a small cyst which necessitated the removal of one-half of the ovary of that side. The patient recovered without meeting serious drawbacks. Three years afterward (1900) she became pregnant and went on to full term.

Two more cases operated on were for fibroids of the ovaries; in both cases there had been much pain and more or less menorrhagia. The growths, however, were quite small. Celiotomy in the first case showed that the growth was evidently the result of an extension from a uterine fibroid of about the size of a hen's egg. The mass involving the left ovary was also small, but it was thought wisest to enucleate it; in doing this it became necessary to cut away fully one-half of the ovary. The patient recovered and was practically free from pain and vascular and nervous disturbances. The fibroid in the second case was sessile and was in the outer half of the right ovary. About a third only of that ovary was left after the removal of the growth. The patient rapidly recovered and was afterward entirely free from pain and menstrual disturbance. Her age was twenty-six years.

The next to report was that of a tumor of the right ovary. There had been more than usual reflex disturbances and other suffering than that which would seem to arise from such a cause. The patient's age was thirty-one years; she was married and had had one child. Abdominal section revealed a distinctly hard mass about the size of an English walnut. The mass could not be enucleated as there was no defined capsule. Excision, including the lower and anterior three-fourths of the ovary, appeared to be the best method of operating for relief. Microscopic examination proved the mass to be made up of a round-celled sarcoma. The left ovary and tube were normal. Though I had at the time some misgivings as to the result, the patient, nevertheless, recovered perfectly; no return of the symptoms has been experienced since the operation, which was done over three years ago.

The next that I can report from my notes is an account of seven cases of conservative treatment of the adnexa undertaken because of inflammatory conditions. In two of the cases the patients were aged twenty-three and twenty-seven years, respec-

tively. The first had been married four years and had given birth to one child. A year afterward she suffered from pyosalpinx on the right side. Abdominal section revealed an adherent and bent Fallopian tube, an inch and a third from the fimbriated extremity. The tube at this point was firmly bound to the under aspect of the ovary. So strong had the false connection become that it was found necessary to incise as far as the bend in the tube. The tube was then disinfected first by the use of sterilized water, and then with a mild sublimate solution. The left tube was adherent, but was easily freed from its adventitious bands; it was disinfected in the same way as the other had been done. Two very fine animal sutures of tendon were passed through the outer wall of the left tube into the peritoneal tissue away from the point of adhesion. The patient recovered and did not subsequently complain of pain or of other discomfort. Two years later pregnancy took place and it went on to full term. The patient, aged twenty-seven, as mentioned, had a purulent condition (gonorrheal) of the left tube. The ovary on abdominal section, except being swollen did not seem so far advanced in disease as to justify its removal. The fimbriæ of the tube were easily freed from their adhesions, the tube was cleansed by the use of sublimate solution and iodoform. The tunica albuginea of the right ovary was found to be much thicker than normal and the ovary itself had become edematous from the inflammation. A granular cyst of the size of a large cherry had to be removed; nearly two-thirds of this portion of the ovary had to be cut away. The incised parts were closed in by the use of fine continuous aseptic tendon sutures. The tube was next disinfected by sublimate solution and peroxide of hydrogen. There was found near the uterine extremity of the tube a sacculated condition of the tube containing pus. The sac was nearly an inch in depth. As this could not be readily cleansed it was deemed best to excise the projection and to suture the wall by continuous sewing as was done with the incised parts of the ovary. The patient rather against expectation recovered well from the operation. She has been well since that time which was over two years ago.

Of the other six cases of conservative surgical treatment of the uterine appendages, three were those of inflammatory conditions of the tubes on both sides; in one case the left Fallopian tube had become so disintegrated at its distal extremity (impermeable) as to necessitate incision for a third of its extent. The

ovary of that side had been partially infiltrated with serous fluid. The ovary on the right side was cut into for the removal of a hard mass of about twice the size of a garden bean. The tube was not interfered with. Since the patient was only twenty-nine years of age, it was not thought wise to do more than was absolutely necessary. The operation was productive of much relief. The other two of these three cases were also treated through an abdominal incision; one was for the removal of a small growth on the left ovary which proved to be an adenosarcoma. A considerable portion of the ovary had also to be excised in connection with the cutting away of the growth. The tube on that side was merely loosened from its adhesions. The ovary on the right side was perfect, but the tube was thickened, twisted, and adherent; it appeared, therefore, doubtful as to its being in any degree capable of proper function. It was left, nevertheless, with a slight hope that the remaining portion of the left ovary might be of service. More than a year has passed and the patient has been comparatively free from the severe suffering which she had endured before the operation. In the third case of this number the treatment was for double pyosalpinx. The left tube and ovary were wholly removed; the right Fallopian tube was not excised, as it was not unduly twisted or deformed. There was a projection or an abnormal point on the right ovary which appeared to be the result of a former hemorrhage into a ruptured or collapsed ovarian cyst of that side. This was excised all round until normal ovarian tissue was reached. The patient has since the lapse of two and a half years been entirely well.

The treatment in the other three cases was principally for the liberation of the adhesions of the appendages, occurring as the result of salpingitis, though it became necessary in one case to incise a disintegrated portion of the fimbriated extremity of the left Fallopian tube. In the two other cases the right tube in one, and the left tube in the other, had to be cut into, in order to overcome the occlusion and to facilitate the means for disinfection; closure of the incised surfaces of the tube was done by continuous suturing.

In the first two cases of this number the results were excellent, in the last, however, the relief was only partial. It will be observed that the number of cases operated upon by conservative measures was thirteen, and that among the favorable results obtained, three were cases of pregnancy following the procedures of surgical treatment.

Of eight other cases since met with, three were operated upon to overcome the effects of inflammation of the Fallopian tubes; one was treated by partial excision of the right and the other by that of the left Fallopian tube. One of the eight cases proved to be of tubercular origin, occurring in the right ovary, necessitating its removal. In two cases abdominal section was resorted to for cystic disease of the ovary. One of these was single and was on the left side; the other was multiple, but the cysts were small and occurring on the right side.

Of the other two cases in which operative measures had to be undertaken, one was for pyosalpinx of the left side, and the other for an ovarian dermoid.

As the time has been more recent since the surgical procedures were undertaken, a full report as to benefits occurring cannot now be stated, though, as yet, no untoward sequelæ have been noticed.

825 MASSACHUSETTS AVENUE.

THE PALLIATIVE TREATMENT OF CANCER OF THE CERVIX UTERI, WITH REPORT OF CASES.¹

BY

WALTER B. CHASE, M.D.,

Consulting Gynecologist and Obstetrician to the Long Island College Hospital; Consulting Gynecologist to the Nassau Hospital, Borough of Brooklyn, New York City.

THE two chronic diseases which have been regarded as almost hopeless and have baffled the skill of the physician from time immemorial are cancer and tuberculosis. As peculiar to the reproductive organs of women that of tuberculosis has lost much of its dread and yields results to treatment most satisfactory, while the results in the management of cancer are most disheartening. Notwithstanding the studies and researches now going on as to the origin of cancer, which is enjoying the best scientific thought, our ability to grapple with the disease successfully is highly unsatisfactory. Extirpation, caustic applications, including electrolysis, seem to have about reached the limit of their curative efficiency, leaving us helpless in our remedial efforts. While these researches

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continue it is but reasonable that more efficient palliative measures be undertaken, and it is to this aspect of the subject as related to cancer of the cervix to which I invite your attention. Perhaps in most advanced cases antiseptic vaginal douches and the administration of opiates comprise the entire treatment.

The indications for palliative treatment will depend on the local involvement and the extent of the destruction of tissue.

In this form of cancer the first indication in palliative treatment is to get rid of all diseased structure possible. When hysterectomy is not indicated the area of ulcerative and infected tissue must be attacked. Conservative procedure does not necessarily indicate the removal of all the infected area. If this has passed beyond the cervix involving the vaginal walls, the broad ligament and adjacent structures it is better to limit the destructive treatment to the superficial area of ulceration. Cautery or caustic applications which result in opening into the rectum or bladder are to be avoided, as the resulting complications add to the discomfort of the patient. Usually the problem is how much of the diseased structures can be removed and what is the best method. After observations and personal experience extending over a series of years I am convinced that no palliative measure is at once so easy and effective as that of the thermo-cautery. It matters little what the source of your caloric is as it relates to its efficiency. A well equipped galvano-cautery plant for hospital work leaves nothing to be desired. As between a portable galvano-cautery apparatus and the Pacquelin cautery, circumstances will determine. The liability of most portable galvano-cautery batteries to get out of order is a serious embarrassment. It is never safe to begin a thermo-cautery operation with a single apparatus. I always have two, be they the galvanic or the Pacquelin.

The late Dr. John Byrne, of Brooklyn, recently deceased, had developed this method to the highest degree of efficiency and his technique was perfect. It was largely to his skill and persistency that the efficacy of galvano-cautery was established. Those who knew him and witnessed his work appreciate and confirm the great value of his teachings. By the use of intra-cervical tenacula, associated with traction, he would not only amputate the cervix without hemorrhage but remove such a portion of the uterine body that what remained was a mere shell of uterine structure, embracing little more than its peritoneal covering. Another cause which I believe gives value and efficacy to this method of treatment, is that the heat of the cautery extends beyond the area of

tissue destruction and is thereby efficacious in destroying the specific cancer cell. This method, when applied, as already mentioned, is usually bloodless.

The special skill consists: first, in not going beyond the area of involvement, and the avoidance of the bladder, rectum, ureters and intestines, and second, in having the cautery knife hot enough to burn the structures and not hot enough to disintegrate them too rapidly. If this is done troublesome hemorrhage may follow. Again the action of the cautery effectually closes the absorbent vessels thereby diminishing and arresting the infective process. I have seen patients far advanced with cancer of the cervix and showing signs of grave systemic infection, lose their cachetic appearance after thermo-cautery operations, and in the cases later reported I shall refer to this feature in their history.

Since resorting to the thermo-cautery method of palliative treatment, I have practically discontinued the potent caustics and escharotics, as steps in primary treatment. Occasionally they will be of value, particularly in cases in which the patient declines the use of the thermo-cautery. The objections to and dangers from the powerful chemical caustics arise from the pain they produce, and the difficulty of limiting the area of the destructive energy, not infrequently involving normal structures and doing violence to the bladder, rectum and other organs which is irremediable. I desire to give special emphasis to the fact that it is quite exceptional for the patient to suffer pain after the use of the thermo-cautery, providing, however, the muco-cutaneous surfaces are not seared or burned. This requires tact and experience. I have usually found it easy to protect the vaginal surfaces from the injurious heat of the cautery by the use of strips of asbestos paper of proper size and shape. Where large areas of ulceration are attacked and the tissues are friable the curette may first be used to advantage. This is likely to result in pretty active hemorrhage. This bleeding is usually easily controlled by the application of pledgets of cotton applied with pressure, first dipped in dilute acetic acid, usually of half strength, or by the use of the adrenalin chloride. After this the cautery knife is to be applied at a dull red heat until the surfaces are thoroughly charred. The after dressing consists of 5 per cent. iodoform gauze, reapplied daily, after cleaning the parts with peroxide of hydrogen. In all manipulations of the cervix the greatest gentleness should be observed. Generally the use of bivalve speculi should be avoided as they are likely to impinge on the cervix and occasion hemorrhage. Dress-

ing is best done with the patient in the Sims position and exposing the parts by a Sims speculum. The only exception is found when the posterior vaginal wall is involved. The slough separates usually in from one to two weeks. Daily dressing must be faithfully applied every day until healing follows, or should it not follow, its use must be continued to keep the parts as aseptic as possible. Where healing is imperfect, and unhealthy granulations reappear, they may be touched with carbolic acid or argentic nitras, pure or diluted as the case may indicate. As in granular surfaces generally the recognized healing power of nitrate of silver must not be forgotten. After the first day or two on removing the gauze the parts should be thoroughly douched by a solution of lysol 5i to a quart of normal salt solution or the same amount of a 15 volume formalin 3i to a quart, or a weak solution of tr. iodine. A variety of platinum knives both for the Pacquelin and galvano-cautery are requisite. Also a dome-shaped instrument is often useful. Added to this the patient should be placed under the most favorable hygienic condition and thorough alimentation and if need be alcoholic stimulants resorted to. Cheerful surroundings are required. Nothing acts more violently or disastrously as a depressant than the demoralization accompanying the disease and the solitude incident thereto.

In some cases the thermo-cautery may have to be repeated at intervals of 2, 3 or 6 months.

It may be suggested that such daily care as brings the best results, and without which they cannot be attained, involves the best nursing and the daily care of the physician. Such is the case. And without it the best possible conditions and results cannot be effected. It is worthy of notice that in proportion as the areas of ulcerative surfaces can be destroyed or lessened by the thermo-cautery, there is usually diminution or arrest of the pain. Sometimes this is followed by restoration to health for a longer or shorter period, occasionally the disease is cured.

It might naturally be expected that in this discussion place should be given to consideration of the use of the Roentgen and the Finsen rays, and radium.

As regards their value in uterine-cancer, it must be admitted our knowledge is largely in the experimental stage, and my experiences with the Roentgen ray and radium are insufficient to warrant the formulating of conclusions. The power of the Roentgen ray in breaking down and modifying the granulations of cancer of the cervix is pretty well established, but how far its curative influ-

ence extends will be decided after longer observation. I have had sufficient experience in the use of the Roentgen ray to know that much care must be exercised not to burn the cutaneous surface. This may be obviated by the use of a properly constructed screen, through which the rays are directed on the cervix, through the vagina. Sheet lead makes a good protector. Waite and Bartlett have such a device, which serves the purpose well. The susceptibility of the skin and the nonsusceptibility of the mucous membrane to burns from the apparatus seem well established.

Pain is so often present in cervical cancer as to demand special attention. That the acrid discharge irritates the ulcerating surface and so aggravates the suffering, goes without saying, and enforces the necessity of cleanliness and the use of proper local disinfectants. Sometimes the patient derives much comfort from solution of cocaine locally applied, or the cocaine may be mixed with adeps. Not infrequently rectal suppositories containing from one to two grains of codeine with ex. hyoscyamus gr. ii, are helpful. With these topical applications resort must be had to opiates. Codeine in increasing doses, is the best until its power is inadequate for the relief of pain, when morph. sulph. may be substituted. The perturbing effect of morphia is sometimes very distressing, in which even the tr. opii deodorata may be employed. Under such treatment the suffering is reduced to the minimum, and the patient made as comfortable as possible.

One other condition, so often present in these cases, the demoralization of the patient as already referred to, needs to be guarded against, for oftentimes the mental solicitude of the patient concerning the outcome of the case constitutes her greatest suffering. Cheerful surroundings, the presence of a discreet and sunny-tempered nurse, who has the faculty of imparting unconsciously some of her confidence to the sufferer will aid in allaying fear. The attendant will find the widest opportunity for the display of skill and tact in securing and retaining the patient's confidence.

In the varying conditions of danger, whether from disease or operative interference, I have most often succeeded in quieting the solicitude of the patient by saying: "You have given me your confidence sufficiently to trust yourself to my judgment as regards treatment; now why not go one step farther and trust me for the results?" In this way I have often succeeded in getting the patient to throw off a solicitude which was detrimental to the highest degree. Certainly the patient should be made to feel that everything was being done for her welfare, which science and

skill could offer. The function of allaying the injurious influence of fear is one of the highest arts of the physician and surgeon.

As illustrative of the results of palliative treatment I report briefly the following cases:

CASE I.—Mrs. —, æt. 43, a patient of Dr. Nutt, of Woodhaven, entered the Skene Sanitarium March, 1901, with a cauliflower excrescence of the cervix as large as a man's fist. She had had no conceptions save those which resulted in miscarriage of which there were several.

This growth was reflected onto the vaginal wall antero-posteriorly and laterally, which forbade a primary effort at hysterectomy.

On March 14th I removed the growth by the galvano-cautery and amputated the cervix at the vaginal junction. The vaginal surfaces and uterine stump healed kindly, save a portion of the cervix about the size of a silver half dollar. On May 21st, following, she re-entered the sanitarium and I performed an abdominal hysterectomy.

Prior to this operation she was weak, anemic and in poor physical condition. Her convalescence was satisfactory. She was kept under monthly observation by her physician and in May, 1902, a year later, there appeared at the seat of the vaginal cicatrix a nodular mass rather larger than a silver 25 cent piece. At this time she entered the Memorial Hospital and I removed a button of structure, opening from the vagina into the peritoneal cavity the size of a silver half dollar. I examined her during this month and she is in perfect health with no sign of the return of the growth.

CASE II.—Mrs. —, æt. 38, multipara, German, a patient of Dr. Fred. A. Cook, of this city, entered the Skene Sanitarium March, 1901, with carcinoma, involving the entire cervix and the disease had extended to the vaginal wall to such an extent as to exclude hysterectomy. I did a high thermo-cautery amputation. The parts healed kindly. Dr. Cook reported to me recently the patient was in good health.

CASE III.—Mrs. —, æt. 46. German, multipara, a patient of Dr. Schaaf, of Newark, N. J. She dated her trouble to a miscarriage 17 years previous. She had a large, bleeding, ulcerating cauliflower excrescence of the cervix extending to the vaginal walls which nearly filled the vagina. The discharge was offensive and the patient's health was seriously impaired from the frequent hemorrhages. She entered the Memorial Hospital September 23,

1902, and on the 25th I removed the entire growth by the thermo-cautery. In two months' time it had healed, under daily dressings, save for a cup-shaped cavity $\frac{3}{4}$ inch in diameter and $\frac{1}{2}$ inch deep. Her general health was greatly improved. Since that time she has had two other thermo-cautery operations, in Nov., 1902, and June, 1903. Since Feb. 3rd, the Roentgen ray treatment has been applied at intervals with the effect of modifying the condition favorably. The growth has broken down to a large extent and much healing has taken place, but symptoms of malignancy have not altogether disappeared. Her general health has been conserved, her life prolonged, and her condition that of comparative comfort. The value of palliative treatment has been demonstrated in this case, for without it she would not probably have survived the winter.

CASE IV.—Mrs. M., German, multipara, a patient of Dr. Fred. A. Cook, entered the Memorial Hospital September, 1902, with carcinoma of the cervix. I did a high thermo-cautery amputation which was followed by perfect healing. About 3 months ago I examined her at my office. The uterus was normally movable and she was in excellent health locally and generally.

CASE V.—During March, 1896, Mrs. —, a primipara, æt. 42, a patient of Dr. E. P. Crowell, came under my observation with typical cancer of the cervix, accompanied with extensive involvement. Hemorrhage was violent and she was cachectic. She was greatly exsanguinated and very weak. She entered St. John's Hospital in March, and I did a high galvano-cautery amputation. She made a slow but satisfactory recovery, as far as the healing and local symptoms were concerned and after two or three months she was able to resume her family duties. In November of the same year she entered the Bushwick Hospital for extirpation of a large Bartholin gland. At this time there was no sign of return of the cancerous growth. On June 16, 1897, she re-entered the Bushwick Hospital, being 7 months pregnant. The disease had returned, springing up around the old stump. After watching its behavior, I feared, from the hardening and infiltration of the uterine and contiguous structures, labor might induce rupture of the uterus, and on July 18th, at the eighth month of pregnancy, I removed the diseased growth, which encircled the uterine outlet by the thermo-cautery. No shock followed and she was delivered of a healthy living child on August 6th. Her convalescence from the confinement was satisfactory as was also the healing after the cautery. She enjoyed good health for nearly a year. Then the

growth reappeared and she entered the Central Hospital, June 21, 1898, and I removed as far as possible the cancerous mass which had returned. She returned home August 25th. The healing was not satisfactory and she died a few weeks later from cerebral embolism.

There is one peculiarity respecting the results following the thermo-cautery operations for cervical cancer to which I desire to give special emphasis, viz., if there is no burning of the mucocutaneous surface (which should be avoided as heretofore suggested), the pain is almost or entirely absent. So also these cases have, in my experience, been greatly relieved and sometimes the pain has disappeared, which was so tormenting before the application of the cautery.

The history of these few cases furnishes data from which you may all draw inferences. It is not claimed that any of them are permanently cured, though there is reason to hope in the first and second cases the disease will not return. The time which has expired gives considerable promise. Further observation will fix the status of them and that of the third and fourth cases. While the treatment of none of these cases was undertaken with much hope or promise of permanent relief the present results are better than any other method of palliative treatment with which I am familiar.

Finally, I desire to state that palliative treatment is not urged or suggested to supersede radical treatment by extirpation, but rather as applicable in post-operative cases on recurrence, in cases which have passed the stage for successful attack and in cases in which the patient refuses any heroic treatment.

ABDOMINAL VERSUS VAGINAL HYSTERECTOMY.¹

BY

JOHN B. DEAVER, M.D.,
Philadelphia, Pa.

CANCER of the uterus is the most insidious and deadly malady of the female genital tract that the surgeon is called upon to treat. Carcinoma in the female occurs more frequently in the uterus than in any other organ or part of the body and affects the cervix in about 90 per cent. of the cases. Unfortunately, many of the women afflicted with this disease suffer from symptoms ill defined, and are free from pain and with but little discharge until the growth has become so extensive as to involve the broad ligaments, the bladder or the vagina. For these reasons the family physician is often unaware of the real nature of the disease in question until all hope of successful surgical intervention has gone.

It cannot be too strongly impressed upon the general practitioner that irregular bleedings from the uterus, whether before, during or after the menopause, should be viewed with suspicion and thoroughly investigated. No feelings of delicacy should prevent an inspection of the cervix and palpation of the uterine body, nor a fear of consequences deter resort to curettage in suspected cases with examination of the scrapings for malignancy. A negative finding by the pathologist should be accepted with great reserve and not allowed to controvert unmistakable clinical symptoms, especially in a woman approaching or passed the menopause. I emphasize the latter because, as is well known, epithelioma rarely begins until after the childbearing period. Many of the cases of supposed hemorrhagic endometritis, with a malignant family history, would be better for a complete hysterectomy. It is the practice of the writer to do a complete removal of the uterus in hemorrhagic endometritis under the circumstances referred to. The question of removal of normal ovaries with the uterus need only be considered when the patient is comparatively young and the disease confined strictly to the uterus and is in its incipency, when it is the writer's practice to leave one or both.

In cases of hemorrhagic or hypertrophic endometritis with foul-

¹Read before the American Association of Obstetricians and Gynecologists, September, 1903.

smelling discharge, curettage should be practiced and the findings examined microscopically. A negative finding by the microscope is not to be considered as an argument against the value of the same as an aid to diagnosis, merely indicating that the curette may have escaped the cancer area or that the latter was situated within the uterine muscle.

In discussing the operative treatment of carcinoma of the uterus we must remember that the surgeon too often does not see the case in the early stages, and must decide whether an operation is feasible and what the chances of eradication of the growth will be.

The cervix is the most common site of cancer, which is usually squamous celled, and in the beginning is essentially a local process, hard and indurated, and with papillæ elevated from the mucous membrane. As these papillæ increase and enlarge, the cauliflower-like growth so often felt becomes apparent. Ulceration and necrosis follow and the crater-like condition, also too well known, may be felt. In the latter stage the vaginal vault becomes implicated, the broad ligaments, the uterus, the bladder and the rectum involved, and, of course, radical treatment can be of no use.

By the surgeon the question must always be considered, whether the excision of the cancer area can be performed by section through normal tissue. Palliative measures for the relief of the discharge, the bleeding or the pain are better done by local measures than by the use of the knife.

To determine the indications for operation a most careful bimanual examination is necessary. If the uterus is adherent and fixed in the pelvis, the broad ligaments extensively infiltrated and the vaginal vault involved, operation is inadvisable. In my judgment the removal of the greater part of the vagina is inadvisable. Cases where there is such involvement of tissue as to require so extensive an operative procedure do much better by thorough curettage and cauterization, repeated if necessary. Recurrence will surely occur in this class of cases, and when the radical operation has been performed, new channels, for the extension of the cancer, are opened up. I have found that the pain consequent upon the recurrence of the growth following late and extensive operation is greater than in those cases curetted and cauterized. It is always difficult, however, to decide accurately the extent of the growth, especially in cancer of the cervix, and therefore where reasonable doubt exists an exploratory operation can be decided upon, and the radical operation performed as being the most con-

servative, whether the carcinoma is located at the cervical or at the fundal end. In the early stages a complete removal of the uterus, broad ligaments and lymph channels in the latter should guard against recurrence with reasonable security.

The decision whether to perform the ablation by the vaginal or by the abdominal route will depend in the early stages upon the particular predilection of the operator. Personally, I strongly oppose vaginal hysterectomy for carcinoma of the cervix uteri, except in the presence of obstacles necessitating such a course. For instance, a very stout abdomen, nephritis, or old age. It is the practice of the writer to do a complete hysterectomy by the abdominal route in fundal as well as in cervical carcinoma. The vaginal operation offers no advantage over abdominal section when the latter is properly and intelligently performed, and suffers from the imputation of being an incomplete operation, dangerous to the ureters and liable at any time to give rise to severe secondary bleeding.

The abdominal operation offers an increased space for necessary manipulation, greater security against hemorrhage and less risk of injuring the ureters. In the Trendelenburg position the field of operation can be kept constantly in view and by gauze packing the intestines are kept out of the way of injury and infection. In abdominal hysterectomy we are better able to keep beyond the area of diseased tissue, a larger portion of the broad ligaments together with their lymph channels can be excised and individual glandular enlargements noted and removed.

Injury to the ureters is not so likely to occur in the abdominal route on account of the better exposure of the structures. While expert operators have occasionally severed the ureters and the introduction of catheters makes any pelvic operation safer, yet I confess I have never introduced them for this purpose. It is usually claimed for abdominal hysterectomy that a thorough dissection of the pelvis can be made with the removal of the infected glands. The lymphatic system of the uterus consists of a rich network of vessels, those from the vagina and lower portion of the cervix following the uterine vessels to glands at the bifurcation of the common iliac arteries, usually three in number, and thence pass upward. The lymphatics from the body of the uterus anastomose with those of the cervix uteri, travel downward to the deep inguinal glands by way of the round ligaments and pass through the utero-ovarian ligaments emptying into the lumbar glands. Yet, with this abundant lymphatic supply, car-

cinoma of the uterus spreads by continuity of tissue more readily and rapidly than through lymphatic metastasis.

I do not believe that the necessity exists to dissect out the iliac glands, as the additional mortality from operation is not repaid by a lessened recurrence. Such enlarged glands as I have removed have been found to be inflammatory and not malignant, and in the event of cancer of these iliac glands the case has become incurable by reason of extensive infiltration of tissues adjacent to the uterus. Extension downward into the vaginal epithelium, forward into the bladder and backward to the rectum, is much more common than metastasis into the pelvic glands.

Epithelioma of the vagina is sometimes overlooked as a point of metastasis or implantation, as the diseased area frequently resembles an excoriation, such as could have occurred in the preparation for operation. Extension into the bladder may be unrecognized, except by means of a cystoscopic examination. In performing abdominal hysterectomy for carcinoma of the cervix I first curette the cancer area, and cauterize with pure carbolic acid, and then recleanse the vagina thoroughly. It may be necessary in some cases where oozing persists to tightly sew the cervix, if the cautery fails to check such bleeding. I do not make a median incision in the abdomen, but prefer to incise through either rectus muscle close to the median line, thus avoiding hernia, one of the so-called disadvantages of the abdominal route.

In performing hysterectomy I use the usual technique and methods of others, with possibly a few variations. After removing the uterus the bleeding edges of the vagina are whipped over by a lock suture. Gauze drainage is introduced into the vagina from above downward and allowed to project slightly into the pelvis when the peritoneal flap from the anterior surface of the uterus, which carries the bladder with it, is brought over the projecting gauze and stitched to the posterior wall of the vagina; in this wise completing the operation as an extraperitoneal one. The abdominal wound is closed by tier suture.

The cautery knife of Downs is used and extolled by a few operators, first, because it renders the operation bloodless, and secondly, that its ultimate results are presumably better in carcinoma cases. I have always been satisfied, however, with my results by the use of suture and ligature and those cases calling for the cautery to destroy tissue are not ones adapted to radical operation. I might add that a multiplicity of instruments, awkward to handle and which tend to make a complicated out of a simple operation, is

to be deprecated. The more ideal results obtained in delicate operative procedures often depend upon a simplicity of technique, few instruments and the skilful use of the gloved fingers. Cancer of the fundus of the uterus is usually an adenocarcinoma and in the early stages the diagnosis depends in a great measure upon the microscope.

The prognosis in these cases is much more favorable than in those of the cervix, perhaps seventy-five per cent. of operations performed early resulting in cure with freedom from recurrence. Such results are due to the slowness with which lymphatic metastasis occurs and to the position of the growth, far removed from the vagina, bladder and rectum. Lubarsch offers the explanation that in cancer of the uterus the epithelial cells are quite large and cannot easily enter the lymph radicles. Cancer of the body of the uterus requires complete hysterectomy and in the early stages may be removed through the vagina.

REMARKS UPON MICROBIAL OR MYCOTIC CYSTITIS IN WOMEN.¹

BY

GEORGE TUCKER HARRISON, M.A., M.D.

It needs no argument to prove the statement that the etiology of cystitis is of paramount importance; here as elsewhere, in medicine and surgery, all rational therapeutical measures must depend upon a clear conception of the etiological factors potent in the production of the disease. The most important scientific work upon this theme is from the pen of Barlow and appeared in the *Archiv f. Derm. u. Syph.*, XXV, 535, and is entitled "Beitr. zur Aetiolog. Prophylax. u. Therap. der Cystitis." Barlow first established the fact that the bacterium found in the urine was most often the bacillus coli communis. He found besides the staphylococcus ureæ non pyogenes and the staphylococcus pyogenes albus. Animal experiments made with these microbes gave very important results. It was proven that without trauma, without urinary retention and without ammoniacal fermentation, cultures of the bacillus coli communis would produce a cystitis when injected into the bladder.

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The injection of staphylococci also produced cystitis. Barlow thus demonstrates that microorganisms alone without auxiliary cause may evoke a bladder inflammation. Rovsing, on the other hand, maintains that in animals the introduction of non-pathogenic or pathogenic germs into the healthy bladder is well borne and is not followed by cystitis.

If the urethra, however, is ligated, so that urinary stasis is produced, the non-pathogenic germs generate a simple catarrhal cystitis; the pathogenic, on the contrary, produce first a simple cystitis which quickly becomes purulent. This much is to be said, the doctrine of Barlow very much simplifies the etiology and is abundantly corroborated by clinical experience. I have seen in the puerperium the worst form of cystitis follow the introduction of an unclean catheter, when trauma and urinary retention could be absolutely excluded as subsidiary factors. As a matter of course Barlow does not deny the influence of trauma or ammoniacal decomposition. He was able to demonstrate the presence of the gonococcus in two cases. The researches of Barlow show that it is absurd to speak of a catarrhal or purulent cystitis, but at the same time the doctrine of bladder irritation determined by factors causing hyperemia is not invalidated. The question may now be asked, how do the microbes enter the bladder? Most frequently, without doubt, through the urethra and in consequence of the use of the catheter. Formerly when the use of the catheter was indicated it was the custom to introduce it under the bedclothes by the sense of touch. Now it is universally recognized that the catheter should only be introduced with the aid of sight. It is evident that without such precaution a cystitis may easily originate in the puerperal woman, or after laparotomy or perineal operations. The question whether the bacteria in the vaginal outlet may attain to the bladder without catheterization is a point upon which all are not agreed. There are many circumstances which favor the affirmative side of the question. In the case of badly fitting pessaries attended with a discharge and in the case of carcinomata a mycotic cystitis is often observed. When the catheter had not been used, v. Gavronsky, according to Fritsch, found bacteria in the urethra in 24 per cent. of healthy women. In certain positions, for example on the side, the urethral contents may reach the bladder. While the infection takes place, as a rule, by the way of the urethra, the fact must be recognized that there are other modes of infection. A cystitis may originate as a result of inflammation in the neighborhood. Thus a para-

metric abscess may break its way into the bladder; and this is by no means so rare an event as is generally supposed. I am aware of the fact that a number of American gynecologists have expunged parametritis from the list of gynecological affections, graciously allowing the possible existence of a puerperal form. It is true that parametritis most often occurs during the puerperium, but it is by no means infrequent after unclean operations on the cervix, after abortions, or after such operations as myomotomy or ovariectomy. Abscesses forming in consequence of the parametritis may readily make their way into the bladder. There is also such a thing as a descending infection cystitis. In angina, pneumonia and other infectious diseases such forms of cystitis have been described.

With reference to symptoms I wish to touch upon one point alone, that is fever. The views of writers are here by no means in harmony. Guyon, of Paris, declares that fever does not belong to cystitis, adding, however, parenthetically, so long as the cystitis is limited to the bladder. Fever with him is always a symptom of the extension of the affection to the kidneys. This is not true in the case of cystitis in women. As Fritsch remarks: "I have repeatedly treated cases in which there existed a severe puerperal cystitis without symptoms of pyelitis. The fever mounted up to 40° C. On making use of local irrigation, the fever declined on each occasion after the irrigation and completely disappeared after three or four days' use of the local treatment. No other affection than the cystitis could be demonstrated during the febrile process." I lately removed, by laparotomy, a pelvic tumor from a young lady, and was perplexed by the existence of a fever, the cause of which I could not find until I discovered the existence of a mycotic cystitis due to catheterization. On making use of irrigations into the bladder the fever and pain in the region of the bladder both disappeared. These observations prove conclusively that there is such a febrile cystitis in women. It is well known that high temperature occurs in diphtheritic membranous cystitis. I may mention in passing that several years ago I treated a case of this form of cystitis in a married woman who had never borne children and suffered from a retroflexed uterus. She developed a severe form of diphtheritic membranous cystitis, the etiology of which I could never fathom. This patient had a high fever. No remedies were able to combat the onward progress of the disease, and just before death she expelled from the bladder necrotic portions of tissue and immediately expired.

Just an observation or two upon diagnosis. A thick, purulent mass with a bad odor is evacuated in cases of membranous cystitis, when the point of the catheter is carried into the space between bladder wall and membrane. The urine does not pass until the catheter enters the cavity of the membrane. Many extensive researches have been made upon the bacteriology of the urine. The most important organisms are the bacillus coli communis, staphylococci, streptococci, gonococci, tubercle bacilli, micrococcus urea, yeast cells and mold fungi. Urine for examination must be obtained fresh from the bladder by the catheter, otherwise it will be mixed with vaginal secretions and extraneous matter from the external genitals. It is well to bear in mind that in cases of long standing parametritis, a rupture of the abscess may take place into the bladder, with no subjective symptoms whatever, the only symptom present being the objective one of a copious deposit of pus in the urine. If there was no pus present the day before, and the urine becomes permanently clear in two or three days, the diagnosis is plain. The differential diagnosis between pyelo-ureteritis and cystitis is only possible as a rule by the use of the cystoscope.

As is true with reference to all diseases which depend upon microbic invasion the most important point in the treatment of cystitis is prophylaxis. An unconditional necessity is the disinfection of the hands of the surgeon as well as the disinfection of the field of operation and the instruments that are brought into contact with the patient. This is a truism so obvious that an apology would seem appropriate in calling attention to it in the presence of an audience composed of experts. Experience, however, has shown me that it is not amiss now and then to recur to fundamental principles as, either from forgetfulness or inattention, the most skilful may offend against them. A glass catheter should always be used, as it may be rendered absolutely aseptic by boiling. It should never be introduced by the touch, but only when the parts are made accessible to the eye and after thorough cleansing. If this is left to the nurse, she should be taught to use artificial light not too far from the vulva, especially in the puerperal woman, as otherwise the urethral opening is not fully exposed. In introducing the catheter no violence should be used; it must be carried in slowly, using occasionally a rotary movement to overcome resistance. In withdrawing the catheter we must be equally careful. If a pain comes on, the catheter is pushed forwards and rotated about its axis, and then slowly withdrawn. As

soon as pain originates the intensely swollen urethral mucous membrane is pressed into the fenestrated openings of the catheter; by a little patient waiting the sphincter is relaxed, then by a slight rotary movement the mucous membrane slips out and the catheter may be removed painlessly and easily. If on the contrary the catheter be forcibly withdrawn, the spasmodic contraction pushes the mucous membrane further within the holes, and a piece of this membrane may be torn off. A wound is thus caused which may be the point of infection, with its consequences. In mycotic cystitis our chief reliance must be on local therapeutical measures, though medical or internal treatment is not to be entirely ignored. One of the best remedies at our command is benzoate of sodium. The only drawback is that some patients who have an irritable stomach find it difficult to take. Salol I have found very efficacious, given in 5 grain doses every two hours. Under its use the urine undergoes a change for the better, the disagreeable odor diminishes, the tenesmus is alleviated, and the pains over the bladder cease. Sodium salicylate is useful, but has not such excellent qualities as the salol. In urine in which there is ammoniacal decomposition urotropin and similar preparations are invaluable. Reference need scarcely be made to the fact that opium or some of its preparations can not be dispensed with in the treatment of severe forms of cystitis. In most cases of mycotic cystitis, the only treatment which leads to complete cure is local. The remedies at our command which most deserve confidence are three: boric acid, nitrate of silver and itrol. In the necrotic and exfoliative forms of cystitis it is important to be very cautious in the use of toxic disinfectants for irrigation. In these cases pure water or normal salt solutions must be used. The strength of the nitrate of silver should at first be in the proportion of 1 : 2,000. After the bladder mucous membrane has acquired some tolerance, we may advance to the proportion of 1 : 1,000. Itrol may be used in the strength 0.2 : 1,000. In some severe cases of cystitis, the use of the permanent catheter is indicated as, for example, when the urethra is the seat of a fissure or ulcer in consequence of badly executed catheterization. The bladder may be irrigated through the catheter as often as seems desirable. The number of irrigations in the 24 hours must be determined by the height of fever. By the permanent catheter stagnation and decomposition are rendered impossible and thus a constant source of irritation to the bladder mucous membrane avoided. Sometimes our irrigations are incapable of destroying the disagreeable odors of the urine on ac-

count of the necrosis of the bladder mucous membrane. At times, as has occurred in my experience a cast of the entire bladder has been detached. Generally it is detached in shreds and may be extracted through the urethra by suitable forceps. It may happen that the necrosed masses are not to be extracted in this manner. Under these circumstances a preliminary dilatation of the urethra is justified. Over-distention should be avoided, however, for fear of that distressing result, an incontinence of the urine. It is certainly remarkable how a bladder may in time recover after the detachment of its mucous membrane. Two of the consequences of long-continued disease of the bladder are *paresis* and *diminished capacity*—contracture. In both cases the bladder wall is thickened and inelastic. By the injection of a solution of boracic acid, of the temperature of the blood, the bladder should be distended little by little until its normal capacity has been reached. There is no apparatus better for this purpose than a funnel of glass or hard rubber to which a piece of rubber tubing is attached, and the tubing itself to the glass catheter. Any pressure desired can be procured by elevating or depressing the funnel.

These cases are very distressing, yet nowhere does treatment properly carried out lead to more gratifying results. If the measures above described prove fruitless, there is nothing left but to make a vesico-vaginal opening, a colpocystotomy. The pain is at once relieved, the tenesmus and fever abate. The bladder may be irrigated through the urethra and the fluid pass through the fistulous opening. If the opening in the base of the bladder is not made too large it will heal spontaneously.

THE PELVIC MUSCULATURE IN DISEASE.¹

BY

HUGO O. PANTZER, M.D.,
Indianapolis, Ind.

THE observant gynecologist can see no occasion for the contention between anatomists over the presence or nonpresence of smooth muscle fiber in the connective tissue of the pelvis. His daily clinical observation affirms the finding of Savage, who describes unstriped muscle fiber everywhere in the pelvic subperitoneal tissue, and names it the pelvic platysma; and of Luschka, who designates the extensive collection of such fibre in the sacro-uterine ligaments as the retractores uteri. Then, there is the free distribution of unstriped muscle tissue chiefly along the courses of the base and upper margin of the broad ligaments, in the round ligaments, cystic ligaments, and in the vaginal wall; and the large striped muscles of the pelvis, notably the pelvic outlet. Here is an array of muscular tissue, subject to the same laws of irritation that govern this tissue elsewhere in the body. Its contraction *in toto* or in part, here or there, varying with the morbid stimulus, it may be supposed, gives rise to phenomena varying as to location and degree, and which should be found helpful in differential diagnosis. The surgeon in the simple cases of bone fracture and dislocation has ascertained definite differential relations between such injuries and the contraction of related muscles. The abdominal surgeon has learned to attach special importance to the active and even spastic contraction of the abdominal muscles. As a matter of fact, the expert gynecologist makes differential distinctions by such muscular evidence. This conviction expresses itself most forcibly where complete anesthesia is required for diagnosis, which effectively annuls muscular rigidity and spasm. The skill of the gynecologist often circumvents this necessity by favorable posture of the patient during examination, by engaging the mind of the patient, and most of all by the gentle and subtle application of the vaginal rectal, or abdominal touch. Those engaged in this speciality often find that what at first touch appears to be a board-like infiltration of a part.

¹Read before the American Association of Obstetricians and Gynecologists, September, 1903.

or of all the pelvic tissues, and which resembles neoplasm or inflammatory condition, under further observation reveals itself to be simply an affection of the ovary. Thus an abscess, prolapse or conjugal trauma of the ovary, or its acute congestion owing to spinal reflex may be the sole pathology found. A circumscribed disease of the tube or uterus, or circumscribed diffuse inflammation or ulcer of the vagina, rectum, bladder, urethra, or ureter, may create similar irritative contractions of the different parts of the pelvic musculature.

By contrast, the perusal of different works on gynecology shows them remarkably inexplicit, or even silent, on the subject of the muscular phenomena in pelvic disease. Winter's most excellent book, *Gynaekologische Diagnostik*, Leipzig, 1896, fails to mention it. The short chapter on pelvic anatomy in most text-books on gynecology says nothing about the unstriped muscular tissue; or where it is mentioned, yet no reference is had to its clinical bearing. One author, who writes the part on pelvic anatomy in a large work by different authors, gives a most admirable description of the smooth muscle tissue as found by different investigators. Incidentally he refers to the clinical bearing it may have. He specifically mentions the retractores uteri of Luschka, stating that their contraction produces anteflexion of the uterus. But the same author in his own complete treatise of gynecology fails to mention this subject. The writer has selected two cases, showing extreme degrees of contraction of the pelvic musculature.

CASE I.—Mrs. H., age 38, living in illegitimate wedlock, has suffered dysmenorrhea for many years. While menstruating she attempted to move heavy furniture. She felt something give way then. Sharp intermittent pains had lasted three days when she was admitted to the City Hospital in July, 1903, where she came under observation. No temperature; increased pulse frequency. Examination revealed the levatores et sphincteres antensely contracted. This condition was the more striking because of the slight adipose tissue. Vaginal and rectal touch revealed a noninflammatory swelling irregularly round, crepitant under pressure, distending the entire left broad ligament. The base of the left broad ligament and the sacrouterine ligaments were painfully tender and contracted, fixing the uterus in these directions. The right broad ligament was comparatively relaxed and nontender.

Diagnosis.—Progressive hemorrhage into the left broad ligament. Various treatment with rest in bed failed to check the

hemorrhage. The pains continued intermittingly and traveled to the other side of the pelvis. Examination revealed the concurrent progression of the swelling in the same direction. While the extravasation passed by the cervix, there was much bladder irritability. Both broad ligaments became distended before the pain and tumefaction ceased. The pain clearly appeared where the blood dissected the peritoneum from the underlying tissue. The entire pelvic musculature at one time or other was more or less tensely contracted during the prevalence of the hemorrhage and pain. Evidently nature had attempted to splint the part by spastic contraction of the adjacent muscles. Since, the writer has had repeated occasion to observe similar phenomena in other cases. The contraction of the muscles of the outlet as a symptom of pelvic hematoma, as compared with its absence where the hemorrhage is into the free abdominal cavity, seems to the writer an observation of diagnostic value. He has failed to find record of similar observation.

CASE II.—Mrs. B., age 29, a farmer's wife of stout stature, was seized suddenly at night with sharp and colicky pains in the lower abdomen and vomiting. She associated the attack with a heavy meal of fried liver taken in the early evening. She had had her flow the previous week, and during its prevalence she attempted to put a bucket of coal into a base burner. She had pain develop in her lower abdomen, and had not felt well there since. The reappearance, out of time, of the vaginal discharge at the time of the last attack suggested the possibility of a relation between the two. Her family attendant called on the evening of the second day. He found a rigid right half of the abdomen, distended and tender over McBurney's point. Temperature 102° ; pulse 120; pain through different parts of the abdomen. Patient next morning was seen with counsel. She had had a restless night and had tossed much. Pain greater in right inguinal region. Diffuse swelling and tenderness through entire abdomen. Parietes rigid. Temperature 103° ; pulse 130, weak. Patient anxious and restless; vomiting since morning.

Diagnosis.—Appendicitis and diffuse peritonitis. I saw patient late that night. Patient now had temperature of 98° ; variable pulse, 120-140; rapid costal breathing; dyspnea. The pain through the abdomen was absent. Patient, however, complained of pain in the pelvis. Abdomen soft, very little distended; shows slight indefinite tumefaction in right inguinal region. Vomiting without effort, at longer intervals, of watery substance. Extremities cool,

abnormally moist. Sensorium bright; slight suggestion of euphoria. Pelvic examination revealed rigid, very painful, thickened bases of both broad and sacropelvic ligaments. Slight bloody discharge from uterus. There was no evidence of peritonitis and the conditions indicating appendicitis were slight and indefinite. The pelvic finding indicated an acute severe noninflammatory infection. The pulse and spastic contraction of the pelvic floor seemed to indicate there might be acute pelvic congestion or hemorrhage. Appendicitis, if at all present, was seemingly on the decline, and its significance waned before the acute grave conditions presented by the pelvic organs. A nurse had been telegraphed for and was expected to arrive in a few hours. Pending her arrival definite decision was deferred a few hours. Early the next morning the patient was found weaker; pulse 140-160, variable, bad; vomiting more frequent and grumous. Temperature 102.5°; some delirium. Abdomen flat. There was increased tumefaction and dulness in the right inguinal region. Patient complained no more of pain in pelvis. Vaginal examination revealed rigidity entirely absent, and there was no tenderness on pressure. Womb and ligaments were naturally movable and relaxed. Patient evidently was moribund from gangrenous sepsis.

Diagnosis.—Gangrenous appendicitis with extensive suppuration. The operation revealed pus in right inguinal region.

The writer would construe that the subsidence of the rigidity of the abdominal muscles observed in the morning occurred because of the progressive spread of the gangrenous sepsis. In turn nature attempted to fixate the muscular tissue of the next wider zone. Thus arose the violent and painful spasm of the pelvic floor, and judging from the costal breathing involved also the diaphragm. Later, on the following morning, the concentric growth of the gangrenous invasion had broken down this muscular wall—the last barrier nature was able to put up.

In conclusion, the writer is aware that this presentation of the subject does not merit the name of a thesis. He hopes, however, that the observations recorded may be found of interest. As such, he would submit them respectfully for critical consideration.

TRANSACTIONS OF THE SECTION ON GYNECOLOGY OF THE COLLEGE OF PHYSICIANS OF PHILADELPHIA.

Meeting of October 15, 1903.

The President, DR. JOHN GIRVIN, in the Chair.

DR. W. REYNOLDS WILSON read a paper entitled

FORCEPS ROTATION IN OCCIPITO-POSTERIOR POSITIONS.¹

DR. B. C. HIRST.—We have been retarded in the development of these obstetrical operations by the way they are done, and we shall be until we accept the fact that obstetrics is a branch of surgery, and that obstetric operations must be performed like any other surgical operations. The majority of forceps operations in private houses are performed with the woman across the bed in an awkward position, in which nobody would attempt any other operation. For the last few years I have always transported a portable operative table to the house and have performed the operation in the same way as any other surgical operation. If performed in this way, in general, it seems to me that we can get better results in posterior positions of the occiput by changing our forceps according to the descent of the fetal head. Personally, I have found that much better results can be secured in posterior positions of the occiput by using axis traction forceps high up to get the head engaged, and as soon as that is accomplished by applying a Simpson forceps. I think the mistake is often made of keeping the axis traction forceps on too long. As soon as the head is well down and impinges on the pelvic floor, and rotation is about to begin, I get better results by the use of the Simpson forceps. I find it better to shift the forceps with the rotation of the head, or a little in advance of the rotation, instead of trying to keep the forceps as a fixed instrument on the head, and having it rotate with the head. The posterior blade acts as a lever and keeps prying the head forward, assisting very markedly the rotation. When the rotation is accomplished, as it usually is, except in a small per cent. of cases, the forceps operation is terminated as if it had been begun with the occiput anterior. This is better than attempting to follow the rotation of the head with the forceps, or to keep the forceps a fixture on the head and letting the blades rotate with it. I believe less injury is done to the pelvic floor, that the operation is shorter in duration, and that less damage is done to the maternal structures.

DR. GEORGE M. BOYD.—I would like to endorse Dr. Hirst's sentiments in regard to making the operation more of a surgical pro-

¹See original article, page 1.

cedure than the usual obstetric operations have been in the past, particularly the forceps operation. There is an advantage in removing the patient from the bed to an improvised operating table. The course that I have followed in the occipito-posterior cases has been, after making traction to remove the forceps, hoping that nature would carry out the maneuver of rotation. Then making a second application and traction. It seems to me that the forceps should not be used often as a lever or as a means of bringing about rotation, but chiefly as a tractor. Bring the head into the pelvis and then hope for the accomplishment of rotation by the pressure of the pelvic floor. In using the axis traction forceps I believe we will get better results if we bear in mind the principles of Tarnier, and unconsciously we carry out this idea in almost every operation. If the head rotates as we make traction upon it, we feel the handles of the forceps turn, and we appreciate that fact and assist somewhat in the maneuver of internal rotation.

In very many of the forceps operations we unconsciously carry out the idea Dr. Wilson has described.

DR. CHARLES P. NOBLE.—I think the chief factor in dealing with occipito-posterior position is to use Tarnier's forceps to get the head down into the pelvis and on the pelvic floor. Then there is no doubt that the resistance of the pelvic floor against the head is the chief factor in accomplishing internal rotation. Like Dr. Hirst, I prefer to take off the axis traction instrument and use other forceps. I have used the Hodge forceps. I know their shortcomings and their advantages. One advantage is that the blades are relatively short and the pelvic curve relatively slight, so that we can assist the head in internal rotation with relatively little risk of injuring the soft parts. There is no doubt that attempting to assist in rotation of forceps is a delicate procedure, and unless it is carefully done with due attention to the mechanics involved the operator is apt to injure the soft parts. I believe that for the average physician the use of the axis traction forceps to bring the head on to the pelvic floor will best enable him to overcome the difficulty. For the average man to try to use the obstetric forceps as a lever is too dangerous.

DR. OLIVER HOPKINSON.—I agree with those who have spoken that the axis traction forceps is the safest instrument in these cases.

I use Tarnier's forceps and always without the fixation screw; used in this way it does less damage. With the occiput posterior I apply the forceps to sides of pelvis, pulling head through superior strait, then removing it, allowing patient to come out of ether. If it is necessary to aid I complete with smaller forceps. I use for this purpose the Hunter forceps, which has very small handles. These forceps are easily applied to sides of head and rotation with it is easier and safer.

DR. DANIEL LONGAKER.—I have nothing to say that would differ from the opinions which have been already expressed. I am in most hearty accord with Dr. Hirst's remarks.

DR. W. REYNOLDS WILSON.—I do not wish to go on record in my remarks as advocating artificial rotation of the head in the cavity of the pelvis. I fully believe in the use of the Tarnier forceps; at the same time I think all of us understand that we may have a large head which is held obliquely in the pelvis and which cannot be dislodged from its position by anything but tractive force, irrespective of the degree of motility in the direction of the axis of the pelvis imparted to the forceps by Tarnier's principle of axis traction. However gracefully we may speak of natural rotation in occipito-posterior positions I think every one of us comes in contact with cases that are anything but suitable to be left to nature, and in which there is no practical opportunity to bring out the fine points of forceps application. There is no doubt that in these obstructive cases, especially in primiparous women, the head is delivered by traction alone. I am sure that this is the experience of every one who has spoken to-night. In difficult cases where the tendency to primary rotation is absent rotation in the cavity of the pelvis by the forceps is undesirable. In this class of cases the head comes down with the sagittal diameter in the oblique diameter of the pelvis, and as it advances the perineum is stretched and torn by the separated branches of the forceps before the head actually comes in contact with the perineum; and, although the head might rotate of itself as it comes in contact with the pelvic floor, by the time it has reached this point there is no pelvic floor left.

On the other hand, as the head makes its exit from the outlet of the bony pelvis, and before it impinges on the pelvic floor, there occurs an opportunity for artificial rotation, and, in difficult cases, this is the first such opportunity. If we can take advantage of this before the head comes farther down we may save the child considerable risk and prevent the danger of serious laceration. The use of the short forceps would probably demonstrate precisely the principle referred to in my paper. The handles in the Hunter forceps, described by Dr. Hopkinson, are so short that lateral traction of the handles as opposed to lateral pressure in the longer forceps would cause the blades to rotate within the pelvis. The displacement of the handles in any forceps is never coincident with the displacement of the blades. The introduction of the right branch in the application to the sides of the head in R. O. P. positions illustrates this axiom—namely, in that a simple depression of the handle of the right branch prior to locking will cause the corresponding blade to sweep in a circular direction from the right sacro-iliac region to an antero-lateral position in the pelvis.

DR. CHARLES P. NOBLE read the report of a case of

FIBROMA INVADIED BY ADENOCARCINOMA.¹

DR. H. D. BEYEA.—I think that if Dr. Noble had gone over the literature thoroughly he would have seen a description of

¹Will appear in a succeeding number of the JOURNAL.

the conversion of the epithelial cylindrical cells into squamous epithelial cells. There have been a few cases in which epitheliomatous somewhat of this character have been described. It seems that the change in the mucous membrane has been associated most often with climacteric conditions. The cells are first cuboidal and then squamous in character. The change taking place in these cells is a peculiar process, and there are perhaps not more than fifteen such cases reported in literature. This woman, 63 years of age, was long past the menopause. She had a fibroid tumor submucous in character, and the surface of the tumor constantly came in contact with the endometrium which would supply the irritation changing the cells into cuboidal and then squamous. It seems probable that there would develop carcinoma of the squamous cell type. I think the case is most interesting, and that it might be explained in this way. Cases have been reported following primary irritation by chloride of zinc or the menopause.

DR. B. C. HIRST.—I had occasion to look over the literature last spring, and found what Dr. Beyea has stated in regard to the conversion of the columnar epithelial cells into squamous cells (Psoriasis uteri). It seems to me the most likely explanation is that this change had occurred on the surface of the tumor, and that the squamous cell cancer had secondarily invaded the myometrium.

DR. CHARLES P. NOBLE.—I have nothing further to say. The explanation is purely a pathological question. I am very much interested in what Dr. Hirst and Dr. Beyea have added. Evidently the condition is not at all common when a man with the large experience of Cullen has never observed it. The cases attributed to Drs. Hirst and Beyea reported in literature, if similar to my own, evidently have been overlooked by Dr. Pearce who made the search for me.

REPORT OF A CASE IN WHICH ATMOKAUSIS WAS USED.

DR. B. C. HIRST.—We have noticed for the last three or four years in German literature mention of the cauterization of the endometrium by steam heat. The treatment originated in Russia ten years ago. It did not attract much attention until it was taken up by the Germans. A patient was brought to me last spring by one of my patients here, because she had not been benefited by her treatment in New York. She gave the history that she had had at least three curettements, that the uterus had been suspended, the cervix repaired, and the kidney suspended. Her chief complaint was metrorrhagia that had continued in spite of all treatment. She had consulted a well-known specialist in New York, who gave her the opinion that she might try still another curettage—I think she had had four or five—if that did not do he would propose the application of atmokausis; that failing, there was nothing left but hysterectomy. The advice, I thought, was sensible, and I was chagrined to think that as I agreed with the opinion, I did not have the means of carrying it out. I therefore sent to Germany many for the apparatus. I am not particularly enthusiastic about

it, but it is a method of treatment which might be borne in mind for just the sort of case described. Its use, I imagine, would be very limited. The apparatus devised by Pincus, the well-known authority on the subject, is ingenious and works well. Thirty-one c.c. of water is put into the receptacle, the lamp is filled with alcohol and within a minute or two the temperature can be raised to about 110 C. Pincus recommends the application of superheated steam for a very brief period rather than steam at a moderate temperature for a longer time. He feels that better results are secured with a temperature of 110 for five seconds than a temperature of 100 for ten to twenty seconds. I followed his advice in the single case in which I used the apparatus.

Personally, I would not apply this treatment so generally as its advocates do in Germany. I would not dream of using it in puerperal sepsis. To let loose the large amount of steam that would fill a puerperal uterus in its soft condition with patulous tubes must be extremely dangerous; nor would I use it for the obliteration of the uterine cavity, except in rare cases of hemophilia or fibroid degeneration of the uterus near the menopause. That the method is not entirely free from risk has been demonstrated in a case of fatal peritonitis recently reported following the application of atmokausis. The post-mortem examination showed no pus tube or other disease of the adnexa; only an abnormal condition of the endometrium.

Pincus in his book says that atmokausis is much the more generally efficient application and the safer one, and following Pincus I used it rather than zestokausis. Points are supplied with the apparatus which can be used for the control of hemorrhage from bleeding surfaces anywhere in the abdomen, as well as tubes for zestokausis.

GALL-STONE.

DR. CHARLES P. NOBLE.—About a year ago the patient was operated upon for stones in the gall-bladder, by another surgeon. The operation lasted quite a time. On palpation there was found to be a stone in the common duct, and on attempting to get hold of it, it slipped up into the hepatic duct. A good deal of time was lost in manipulation. The patient's condition became such that the operator concluded that he had better stop and let the stone be taken care of at some future time. The operation was completed by draining the gall-bladder. Since the time of operation the entire amount of bile has been discharged through the biliary fistula, none whatever being in the stools. The patient came under my observation with the advice and consent of the previous surgeon, and is now in the hospital awaiting operation. I thought it of some interest clinically that the patient could do without her bile for nine months without marked impairment of her digestion or nutrition.

TRANSACTIONS OF THE WOMAN'S HOSPITAL SOCIETY.

Meeting of October 27, 1903.

The President, BACHE McE. EMMET, M.D., in the Chair.

POST-OPERATIVE TOILET OF THE PERITONEUM.

DR. J. RIDDLE GOFFE.—Last week I had a case of ectopic pregnancy, diagnosed by me before rupture. Upon opening into the peritoneal cavity through the anterior fornix a terrific gush of blood and clots spurted out, the clots being of all sizes and colors—dark showing old, and light showing recent hemorrhages. I brought the uterus down into the vagina, following it with ovary and tube of right side. The tube seemed to be unruptured. The enlargement was located one inch distant from the horn of the uterus with the distal end of tube free; fimbriæ uninvolved. I was puzzled to know where the hemorrhage came from. On turning the tube over, I found the merest pinhole puncture with a minute clot in the mouth. I made up my mind the hemorrhage came from there, stitched off the tube and removed it, leaving the ovary. I removed a reasonable amount of clots, and closed the incision leaving drainage in the posterior fornix. I did not deem it necessary to remove all the clots. I have no doubt a number of clots remained in the coils of the intestine. The patient reacted from the operation slowly but satisfactorily, and on the third day in the morning, I gave her half a bottle of citrate of magnesia; her bowels moved freely in an hour, and several times afterwards. On the following day she developed signs of obstruction. That night she vomited about a pint of coagulated milk and fluid of the color of liquid fecal matter, although without a very strong fecal odor. In the course of two hours the stomach filled again. I washed it with a stomach tube, getting more of the same material. I gave high injections of turpentine and soapsuds without relieving her. There was much distention, the patient was very much nauseated, with great depression. Pulse 130 and very feeble. I made all arrangements to take the patient to the operating room but as a last resort, I tried ox gall high enema. This proved effectual in removing the obstruction, and she passed large amounts of gas; the bowels moved well, and she has done nicely since. The question is whether it might be possible that the obstruction had come from blood clots forming adhesions among the intestines. The answer to this question involves the question of the

toilet of the peritoneum under similar circumstances. I therefore propound it as a subject for discussion.

DR. JOSEPH E. JANVRIN.—In what part of the intestine did the obstruction exist?

DR. GOFFE.—The pain was located at first low down on the right side—the appendiceal region. Later it became more intense and distinctly localized on the left side at a level with the umbilicus.

DR. GEORGE T. HARRISON.—In regard to toilet of the peritoneum, I think Dr. Goffe did all he should, and not any more. No harm results from leaving clots in. The less the peritoneum is interfered with, the better. I think nature can take care of everything if we leave it clean—don't put micro-organisms in or injure the epithelium. I think Dr. Goffe's is a typical case of ileus, and that he treated it with great skill. Many men would have reopened the cavity from above to see thoroughly, and lost the patient. It was simply a case of paresis—with no obstruction. The fact that he relieved the case proves that there was no organic obstruction.

DR. JANVRIN.—I think what Dr. Harrison says is true; the result probably proves it. In this case, what was the cause of paresis? There was very little manipulation in the operation itself. Paresis of intestines after abdominal section is usually caused by manipulation.

DR. HARRISON.—In some cases very little manipulation is sufficient to produce it. A case of mine ended fatally after craniotomy in a woman with a very narrow pelvis, where the intestines had not been handled at all. It was clearly a case of ileus. The injury to the intestine must have been indirect.

DR. HERMAN GRAD.—In regard to the question of paresis I saw a case similar to that of Dr. Harrison's. It was an obstetrical case. Patient went through a difficult forceps operation. On the fifth day the patient began to have tympanites. Temperature absolutely normal; bowels had moved. The tympanites became extreme, embarrassing respiration. After a considerable time she recovered, but the cause of the paresis was never explained.

I had a similar case recently; severe pneumonia, with tympanites.

In both these cases there was no manipulation of the intestines.

In the obstetrical case there was no rise of temperature—no sepsis. In the pneumonia case there was some sepsis; the blood showing leucocytosis.

DR. BACHE MCE. EMMET.—A thrombus might produce these conditions. The flow of blood might be arrested in a vessel during operation, paralyzing a portion of the gut. This may be due to necrosis or the mere fact of operation and repressed vitality.

In the case Dr. Goffe cites, I think that the blood clots might have had something to do with the symptoms of obstruction. I don't agree with Dr. Harrison that it would be unwise to go

into the abdomen to see thoroughly. Dr. Goffe would have operated further had the enema been unsuccessful; he said he tried that as a last resort before sending the patient to the operating room. If the trouble had been in the small intestine the water would not have reached it, probably, as it does not as a rule penetrate above the cecum unless a great force of water is used. I think operation essentially called for if patient is not relieved. I have seen several cases die unexplained without securing relief at all. Unless we went into the cavity, I think we could at no time feel certain of overcoming the difficulty.

DR. BROWN.—I would have suggested oxygen as used by Dr. Cleveland. All at the Hospital have used it with good effect. It acts better than the high enema. I have never seen it used with bad effect. In several instances, there has been marked distention with failure of bowels to move on the fifth or sixth day; apparently some obstruction. Three or four injections of as much oxygen as the patient can stand, repeated in three or four hours, have, in every instance as far as I can recall, been rewarded by final complete evacuation and passing of gas. In no instance did we have absolute proof that there was an obstruction.

I wish to speak of a case operated on this summer at the Manhattan State Hospital which called for much thought on my part as to the cause of the trouble. A patient with simple double tubal trouble was operated on at the hospital. The operation was simple and uncomplicated. The pedicles were covered over afterwards, and the intestines were not handled. They were protected by gauze wet in normal salt solution as is customary. The patient made a typical uneventful recovery. Two months after operation, she developed nausea; not much distention. This continued for a week or ten days, and finally became very suspicious. The abdomen was opened, and I never recall seeing such a mass of adhesions in the abdominal cavity. The direct cause of obstruction was a band of omentum that obstructed the ileum one-third of the way down its length. All the rest, down through the colon, was perfectly flat; that is, very little distention. Adhesions to peritoneum dense and strong. In the pelvis they were remarkably abundant.

Even after an uncomplicated operation, how little we can foresee what will take place. May not the formation of adhesions be due to the condition of the patient herself. I mean by that, patients with uric acid diathesis may develop more adhesions than others. I was astonished at the amount of adhesions among intestines following such an uncomplicated operation and such a recovery.

DR. T. THOMPSON SWEENEY.—I saw a nullipara with a very large polypus, filling the vagina. The polypus measured as much as three inches in diameter. The only symptom complained of was frequent urination. No hemorrhage. I thought it interesting, as she had no symptoms except frequent urination, which I judged was due to pressure of the tumor on the bladder.

DR. HARRISON.—I should like to suggest as a more probable explanation of the frequent urination, that it was due to hyperemia of the bladder. In pregnancy it is the same, and not pressure of the uterus. It is the same in menstruation; there is irritation, and frequent urination due to hyperemia of the bladder.

DR. MARTIN.—We had occasion a short time ago to infuse a patient, making an incision on the left arm. The incision seemed to go just through the skin, not into the subcutaneous tissue. A bluish vessel appeared and we inserted the ligature. We tied off the lower part, when there was a welling up of blood, but no spurt. Instead of the fluid running into the vessel, it returned, and we had to give up the efforts at infusion. Following this we could find neither radial nor ulnar pulse. The brachial artery was apparently quite deep, just below our small incision. Last night we felt a very small pulse, which has grown more distinct.

The interesting point about this case is the peculiar position of the brachial artery, if that was what we tied off.

We were uncertain as to whether such an accident would give permanent damage, or if the circulation around the elbow would be free enough to prevent harm.

DR. GEORGE C. FREEBORN.—I would suggest that a dissection would probably show something abnormal.

DR. BROWN.—I saw a patient three days ago, a woman thirty-two years old who had had two previous abdominal sections; one was to replace two ovaries which had fallen down, and a subsequent operation three years ago was the removal of those same ovaries. This condition brought her to my clinic: She had constant headache, and the uterus, which was small, was lying backward. Whenever it was put up, she had immediately a violent pain on the top of her head which she said was relieved by the support being taken from that point and some pressure applied in front of the uterus. I thought this was wrong but said nothing to the patient. On examining her the first time I found a small uterus lying backward; in making a bimanual examination I pushed it up. As soon as I did so, she complained of violent pain in the top of her head. I ceased the pressure and the pain subsided. I did abdominal section this afternoon, and found that the colon was adherent on the right side to the stump where tube and ovary had been removed. The pain was reflex. I think this an unusual case. I expected that she would have pain in the pelvis but not in the head from pressure on uterus.

DR. EMMET.—We see many cases of women who suffer pains for which there is no apparent reason, and for which we cannot account until we find adhesions on stumps. When pulled upon, or otherwise displaced, there is pain.

DR. JANVRIN.—A man 51 or 52 years of age was brought to the hospital at Cooperstown, and I saw him late on Thursday afternoon, August 6th. He was a farmer and on the preceding Saturday had been at work lifting sheep and throwing them over the fence. Had worked very hard. He ate a hearty dinner

and in the night was taken sick with severe pain in the stomach and vomiting. Was attended by the local physician but went on from bad to worse. The vomiting continued for four days and there had been no movement of the bowels. He had all the symptoms of obstruction. It was evident that an exploratory laparotomy was the only means whereby he could be relieved. I made a free incision into the abdomen and found the bowels congested, the small intestines very much distended, so much so that they rolled out and it was impossible to keep them in place. I found, low down in the small intestine, about six inches above its entrance into the large intestine and proceeding from the left border of the omentum (the omentum thrown over to the right side), an adventitious growth, muscular in appearance, and that growth was directly around the intestine so that the lumen of the intestine was completely closed. For quite a long time the man had had dyspepsia, pain in the intestine, etc. and a good deal of trouble in evacuating the bowels. I cut the band, released the intestine and covered the cut ends of the band with peritoneum so as to leave no raw surface; and then came the difficulty, to replace the intestines. I could not do it until they were thoroughly evacuated. I tried to aspirate the contents, but they were too thick to exude. I had to make two incisions to get the intestines drained, in as cleanly a manner as possible. The punctures were sewed up and at the expiration of about an hour, or an hour and ten minutes, the patient was placed in bed. Everything went on very nicely; the bowels moved at the end of 48 hours, after giving him calomel, and he was recovering perfectly satisfactorily, when on the ninth day he developed a tremendous attack of pneumonia of the right lung. I think it was not septic, but the result of taking cold. The night was chilly, and the room became very cold. He died on the ninth day of his pneumonia, eighteen days after operation. It was an interesting case because the obstruction though unusual in character, was found very readily. I could not explain how that growth could have taken place. It was an offshoot almost as large as the index finger, coming apparently from the anterior wall of the omentum, going right around and connected with the omentum and mesentery on its posterior surface. A perfect whipcord.

DR. GRAD.—Might it not have been Meckel's diverticulum grown to the omentum?

DR. JANVRIN.—That might account for it.

DR. GRAD.—I saw a case some years ago, a similar condition, which showed very distinctly that it was a Meckel's diverticulum.

DR. JANVRIN.—It included the intestine?

DR. GRAD.—Yes, except that in this case a loop of intestine slipped into it.

DR. WEST.—The growth in your case, Dr. Janvrin, passed around the mesentery?

DR. JANVRIN.—It passed around from the base of the mesen-

tery posteriorly to the omentum anteriorly, thus making a complete circle around the intestine and shutting it up absolutely.

DR. GEORGE T. HARRISON read the paper of the evening:

MICROBIAL CYSTITIS.¹

DR. GOFFE.—Dr. Harrison speaks of the unfortunate use of the catheter. I think at the present time, with our knowledge of infection and the careful instructions as given to nurses, we ought to be absolutely free from infection from catheterization.

In regard to the other sources of infection, I think we all recognize them as happening occasionally and the treatment that has been given, we all subscribe to. In the treatment of cystitis, I have found that the use of nitrate of silver, and the silver salts generally, has given me the best results.

In contractions of the bladder, I have been able, during the past year, to relieve three cases by hydraulic pressure. In one case of irritable bladder with frequent micturition, where the capacity of the bladder was very small, even down to two ounces, I have by gradual pressure increased it from twenty-six to thirty ounces, with very gratifying relief to the patient.

DR. GRAD.—The subject of cystitis is of interest to me. I have had a few puzzling cases under observation. I wish to speak briefly of cystitis in puerperal cases. I remember in the case of a primipara it was necessary to catheterize the patient and I did it myself, twice a day; I was very thorough in asepsis, yet she developed a marked case of cystitis. A few other cases have been observed, some happening even with the most scrupulous care. To find an explanation of this I was at a loss until it occurred to me that Skene's glands had something to do with these infections. In these glands an infection occurs, which is pushed into the bladder by means of the catheter. Dr. Kelly has looked into the subject and finds that these glands are frequently involved. He has written an article on the subject. His paper makes interesting reading as well as his method of treatment. I believe that may be one source of infection.

As regards treatment, Dr. Goffe mentioned the method employing a rubber bag. I have had three cases, two in the dispensary, one private, where I found the use of these bags highly effective. The bag is introduced in a collapsed state, with the urethroscope, then the urethroscope is withdrawn and the bag is inflated. It is useful in any treatment where you wish to come in intimate communication with the mucous membrane. I have used it with good result in cases of long standing, say two years, where the patient would have to empty the bladder twenty times a day. In one case examination by the urethroscope showed three ulcers, two between the ureters, $\frac{1}{8}$ " in diameter, one larger. In this case I used a 10-per-cent. ichthyol solution. When ichthyol is not indicated, suprarenal extract may be used to cause contraction of the small arteries, then apply medication.

¹See original article, p. 95.

I believe, from my cases, that the rubber bags are highly effective. One case was very chronic, and it still yielded readily. We find in these cases of cystitis, a marked congestion of the base of the bladder. I believe Dr. Harrison mentioned that as a cause of the frequency of urination. I think that is true. Just as soon as the congestion is relieved, the patient is more comfortable, and doesn't have to urinate so frequently. It is interesting also, I believe, that in these cases, no matter how careful we may be in the use of the catheter, still we have infection. I cannot explain it except that the cause of the infection lies in Skene's glands.

DR. EMMET.—I think everybody should use the endoscope so that isolated spots may be treated. Oftentimes a patch of tissue on the surface of the bladder might be treated without treating the whole; it is more scientific to treat only that which is diseased.

A point not mentioned in Dr. Harrison's paper, probably omitted through an oversight, is, that often while the operator is careful to have the catheter and his own fingers clean, the patient is not washed about the vulva and meatus. Much trouble arises from this cause. I think, also, that we dwell too long on local treatment, many times, where we might, with greater advantage, form a fistula early. Where the patient is willing, it is well worth trying. A good rest thus afforded, will often be followed by a spontaneous cure.

DR. A. PALMER DUDLEY.—I did not hear Dr. Harrison's paper and cannot discuss points raised. I have one suggestion to offer following Dr. Goffe's remarks. I think the use of argyrol preferable to nitrate of silver; it can be used with the utmost ease and without the slightest pain, as strong as 20 per cent. A solution may be made of it, to wash the bladder, or touch any point shown to require it by inspection through the urethroscope, using 20 per cent. directly.

I consider it preferable to nitrate of silver because it is painless.

DR. HARRISON.—Perhaps, as Dr. Dudley says, the salt of silver is the best at our command, but no doubt it would irritate. I think there is nothing better than nitrate of silver.

An Italian woman had for ten years passed enormous quantities of urine mixed with blood and pus. Her bladder was contracted, and her life was one of intense misery. It was impossible to do anything in the way of ordinary irrigation. I dilated the urethra and passed my finger into the bladder. At its base I found ulceration and papillary growths. I broke down some of them by my finger. This was done under ether. She was much improved but not cured. She felt so much better that she afterwards allowed me another operation. This time I used Thomas' dull curette to get rid of the papillary growth and then went on irrigating the bladder with the gratifying result that the woman was completely cured.

A man who has recently passed away, Robert Newman, gave us much useful information in regard to these cases and the use of the endoscope.

H. GRAD,
Editor.

TRANSACTIONS OF THE OBSTETRICAL SOCIETY OF LONDON.

Meeting of October 7, 1903.

The President, EDWARD MALINS, M.D., in the Chair.

DR. JOHN D. MALCOLM read a paper on

AN OPERATION FOR EXTRA-UTERINE GESTATION BETWEEN THE
THIRD AND FOURTH MONTHS OF GESTATION, WITH REMOVAL
OF A LIVING FETUS AND MUCH TROUBLE FROM HEMOR-
RHAGE DURING CONVALESCENCE.

The patient, a healthy woman, was married on October 9th, 1899, at the age of 23. In the middle of April, 1900, she felt depressed, and menstruation became irregular. She had attacks of pelvic pain, with nausea, commencing on May 12th, June 3rd, June 15th, June 28th, and July 12th. In the last two attacks there was fever, and in the final one there was obstinate constipation and vomiting. On July 17 there was a large abnormal mass felt behind the upper part of the vaginal wall, nearly filling the pelvic cavity, and rising to about halfway between the pubes and the umbilicus. The uterus was somewhat enlarged, was dragged up, and pushed over to the left side of the pelvis.

On July 18th, 1900, an incision was made in the middle line above the pubes, a small pus cavity being opened, and through it the amniotic sac was evacuated. A fetus of between three and four months' development was extracted without opening the peritoneal cavity, and the placenta was felt with an extensive attachment over the right side and floor of the pelvis. The cavity was packed with iodoform gauze, and no attempt was made to remove the placenta. The latter remained alive, and there were frequent and sometimes profuse hemorrhages when the gauze packing was changed between July 24th and August 10th. On the latter date an attempt was made to break up and get away the placenta. A small piece was torn off, but hemorrhage was so alarming that the wound had to be packed immediately. The placenta was killed by this procedure, and there was hardly any blood lost afterwards, although every bit of the placenta had to be peeled off the maternal tissues, and its removal was not completed until August 26th. There was an inflammatory attack with some intestinal difficulty in September, and the wound did not finally heal until the middle of December. The patient was now in perfect health.

A table containing a short note of all the cases reported in the Society's Transactions between 1887 and 1902 was added to the paper. Some of the methods of arresting hemorrhage and other points were referred to, and it was urged that when an extra-uterine fetation was diagnosed, if it was believed that the fetus was alive, an operation without any unnecessary delay should always be recommended.

DR. CUTHBERT LOCKYER contributed a paper on

A CASE OF RUPTURED TUBAL GESTATION, IN WHICH THE OVUM CONTINUED TO LIVE FOR ABOUT FOUR MONTHS, THE GESTATION SAC BECOMING IMPLANTED ON THE OMENTUM.

The symptoms began with uterine hemorrhage and the passage of a decidual membrane on December 27th, 1903; this was after a period of amenorrhea dating from the end of October (eight or nine weeks).

Signs of internal hemorrhage appeared on January 11th, 1903 (about the eleventh week of gestation). A swelling in the left ovarian region was palpable on January 20th.

A second crisis occurred on February 5th, and a third on February 9th.

The operation took place on February 11th, and death took place twenty-four hours later.

The primary tubal rupture occurred through the upper, or peritoneal aspect of the tube, and the fetus escaped into the abdominal cavity; chorionic villi gained immediate attachment to the lower edge of the omentum, which approximated, and presumably was adherent to the tube prior to rupture. The omentum enveloped the gestation products and soon shut them off from the general peritoneal cavity.

The secondary gestation sac, so formed, seems to have remained intact from January 11th until February 5th.

On February 9th, the time of the third crisis, the fetus probably escaped through a rent in the amnion, since it was found in the peritoneal cavity two days later at the time of the operation.

There was no hemocele formation.

The way in which implantation onto the omentum took place was analogous to that which occurred when, the rent having been below, the villi grew out between the layers of the broad ligament, but events proved that the risk of secondary rupture was greater when the sac was formed of omentum than when the envelope was composed of the broad ligament folds.

A clinical comparison between cases where the secondary gestation sac is situated in the peritoneal cavity and those where it is placed between the layers of the broad ligament was attempted. Attention was drawn to the peculiar mode of closure of the ruptured tube.

The different routes by which the fetus may find its way into the abdominal cavity and continue to grow were discussed.

DR. HELLER brought forward the report of

A CASE OF ABDOMINAL PREGNANCY, SECONDARY TO PARTIALLY
RUPTURED PREGNANT TUBE.

An interesting discussion then took place on these three papers.

DR. HERMAN thought the Society was to be congratulated upon the papers read before it that evening, the authors of which deserved its thanks. He thought Mr. Malcolm had treated the case he had related to the Society very wisely; and he agreed with Mr. Malcolm in his recommendation that operation should be performed without unnecessary delay in all similar cases. But Mr. Malcolm went further than that. He extended his recommendation of prompt operation to all cases of ectopic pregnancy, in which the fetus was living, whatever the period of pregnancy. In this, he (Dr. Herman) could not agree with him. In the first half of ectopic pregnancy certain dangerous events were frequent; rupture of the tube or of the gestation sac; and their ulterior consequences. At this period the placenta was small, its area was so limited that it could be satisfactorily dealt with. Even at this period as Mr. Malcolm had shown, hemorrhage often gave great trouble. But in the second half of ectopic pregnancy the conditions were different. The further the pregnancy went on the more vascular was the placenta, so that bleeding was greater, and the larger was the area of the placenta, so that the difficulty of stopping bleeding was greater. Mr. Malcolm had quoted Dr. Champney's compilation of cases, made in 1887, and showing a mortality of 88 per cent.

Among cases of ectopic pregnancy operated upon at or near term while the fetus was living, he (Dr. Herman) was not aware of any considerable number of cases published since, which showed much reduction of that mortality. Before proceeding to this dangerous operation, they should consider what would happen if the operation were not done. When the patient had reached the second half of ectopic pregnancy, the liability to rupture of the sac was a thing of the past. Dangerous accidents of any kind were rare in the second half of ectopic pregnancy. When the patient got to term, spurious labour came on and at this time the patient was in practically no danger. Then the child died, the liquor amnii was absorbed, and finally after an interval, the length of which we as yet knew not exactly, the placenta became thrombosed. The patient was as a rule in no danger until suppuration took place; and the cases collected by Parry, showed that the time at which suppuration began, varied from a month to two years, and was upon the average about six months. Suppuration might not occur at all, and the patient remain in good health to the end of a long life, subject only to the inconvenience of an enlarged abdomen. She was in no danger until suppuration began, and if operation were postponed until this date, the placenta would almost certainly be thrombosed, and it could then be easily peeled off without hemorrhage. He had exhibited to

the Society (Trans., Vol. XXVIII., p. 141) specimens from a case illustrating this. He therefore could not agree with Mr. Malcolm that immediate operation should be done in the second half of ectopic pregnancy with a living child; he thought that by far the safer course was to wait until symptoms of suppuration had begun.

DR. VICTOR BONNEY was interested in the papers he had listened to because within the last few months two similar cases had come under his own notice.

In the first a two months' tubal gestation had ruptured into the broad ligament, and formed a large sac into which bleeding had occurred during a period of six weeks.

In the second case the patient, after missing two periods, was suddenly seized with severe pain, accompanied by some loss and followed by the passage of a uterine cast. The bleeding was slight and was followed by another two months' amenorrhea. An examination 4 months after the beginning of pregnancy, revealed all the signs of a typical extra-uterine gestation—indeed the placenta could be felt in the pouch of Douglas by vaginal examination.

Both these two patients were subjected to operation by Mr. Bland-Sutton and an enormous retroperitoneal collection of blood was found in the first, whilst from the second a perfect and unruptured secondary abdominal sac, containing a living fetus of between four and five months was removed with a successful result.

In this latter case the removal of the placenta was followed by very free bleeding.

He considered that in the question of the advisability or not of removing the placenta at once in cases such as this last one, there were two main points to consider: firstly, the period to which pregnancy had advanced, and secondly, the mode of placental attachment in the particular case under consideration.

DR. AMAND ROUTH said that the case so ably commented upon by Dr. Lockyer had proved a very disappointing one.

The patient had had three attacks of collapse from internal hemorrhage with nine weeks amenorrhea.

The diagnosis of extra-uterine gestation was made from the history and the physical signs. It was assumed that it was a secondary intra-peritoneal pregnancy after tubal rupture, owing to the tumor being entirely distinct from the retroverted uterus. At the operation the placenta was found to be already separated on its central maternal surface, and adherent at several parts of its circumference to omentum and broad ligament. After its removal there was a profuse general capillary hemorrhage from all the underlying structures. This was at once arrested by firmly applied gauze pressure. As the anesthesia passed off, uncontrollable vomiting ensued, and she died of exhaustion in 24 hours. Dr. Routh asked for the experience of those present regarding the persistent amenorrhea in this case and the one mentioned by Dr.

Victor Bonney, instead of the usual metrorrhagia. Was it peculiar to these cases of secondary intra-peritoneal pregnancy?

DR. HEYWOOD SMITH wished to ask Mr. Malcolm whether in his case he had used adrenalin for the arrest of the hemorrhage, as he (Dr. Smith) had found both it and tincture of matico of great service in such cases of oozing after separation of adhesions.

MR. MALCOLM, in reply to Dr. Herman, said that if an operation is performed, as advised in his paper, whenever an extra-uterine fetation is diagnosed, and the fetus is believed to be alive, undoubtedly cases would be operated upon, which would get well without operation; as for instance, such a case as that recorded by Mr. W. R. Watkins in the eighth volume of the Transactions (p. 106), in which a patient died at the age of 74, having carried the remains of a full time extra-uterine fetation in her abdomen for 43 years. At the post-mortem examination, the abdominal parts were slightly adherent to the maternal tissues. But Mr. Malcolm contended that if the operation proved very difficult and dangerous during the life of the fetus, it would be more dangerous if delayed until suppuration took place, or if it had to be performed for severe hemorrhage. He allowed that different views might be taken but it seemed to him that under all circumstances, delay in operating was likely to give occasion for the development of more dangerous conditions.

In the cases referred to by the second speaker, it had been possible to seize the torn parts with forceps, when of course the arrest of hemorrhage was comparatively easy. In Dr. Routh's case the great difficulty was that it was impossible to seize the bleeding tissues in forceps, and there was no point of counter pressure, as in a case where an extra-peritoneal sac existed, and could be packed firmly.

With regard to the development of a true abdominal pregnancy arising outside the tube and outside the ovary. Mr. Malcolm thought this was quite possible. All that was required for the development of the ovum, seemed to be a free supply of blood and that could be had from the peritoneum.

Mr. Malcolm thought that Dr. Taylor's deductions from observations made during an operation performed in 1896, and recorded in the Society's Transactions, explained the method of development of extra-uterine fetations most satisfactorily. Dr. Taylor taught that so long as the amnion did not rupture, and the supply of blood to the placenta was sufficient, the fetus in the amnion might develop anywhere to full term.

REVIEWS.

ESSENTIALS OF PELVIC DIAGNOSIS. With Illustrative Cases. By E. STANMORE BISHOP, F.R.C.S., England; Hon. Surgeon Ancoats Hospital, Manchester; Vice President British Gynecological Society, London, etc. And an appendix on examination of blood, etc. By CHARLES F. WELLAND, M.D. (London), M.R.C.P.; Hon. Physician Ancoats Hospital, Manchester, etc. Pp. 297, 8vo. Wm. Wood & Co., New York, 1903.

This is a work which the reviewer has studied with much benefit and considerable pleasure, and which he cordially recommends to those teachers and students of medicine who are interested in the diagnosis of pelvic conditions.

Most works predicate the disease as already known, and in teaching diagnosis give the various symptoms with, perhaps, the main points of difference between it and those that most nearly simulate it. In practice the symptoms are known; the disease is not. It has to be deduced, and this work is an effort to make this mental process with regard to pelvic disease more sure and easy. Starting with readily observed symptoms or signs, the differences between various classes in which they are equally present are signalized. These classes are again divided into groups in the same way; the groups once more into sections, which in their turn are split up by definite variations in symptoms until a definite diagnosis is obtained. This differentiation has been worked out in two ways: first, by a series of paragraphs entitled, *Lines of Diagnosis*; and second, by a series of *Diagnostic Tables*. To these are added a series of illustrative cases in which the relative value and meaning of the various symptoms are explained and discussed. Preceding all this are chapters on methods of diagnosis, including the use of the hand; positions of the patient, which may not be entirely accepted without exception by American readers; the use of instruments for diagnosis, and a very fine chapter on pain as a factor in the diagnosis of abdomino-pelvic disease.

The general make up of the work is good, the type clear, and the drawings excellent.

DIE PATHOLOGIE UND THERAPIE DER UNFRUCHTBARKEIT DES WEIBES. VON DR. FERDINAND SCHENK, I. Assistent der k. k. deutschen Universitäts-Frauenklinik Prag. S. 128. S. Karger, Berlin, 1903.

Schenk's monograph upon sterility in woman is based upon the statistics of Sänger's clinic, from 1891 to 1899, comprising 397 primary and 21 secondary cases. The writer considers the causes under the headings of local, general, and unknown pathological

changes. In 110 of the cases, both husband and wife were examined. In 46.4 per cent. of these the trouble was found to be direct male sterility; in 12.7 per cent. it was indirectly due to the male through transmission of gonorrhea to the wife. In only 40.9 per cent. was the cause distinctly feminine. Of 287 cases of primary sterility in which the woman alone was examined, gonorrhea was found in 34.8 per cent. The writer finally discusses the subject of treatment.

BRIEF OF CURRENT LITERATURE.

OBSTETRICS.

Rapid Manual Dilatation of the Cervix.—R. J. T. Meurer (*Monatschr. für Geb. u. Gyn.*, Bd. xvii, H. 6) compares the advantages of various methods of artificial dilatation of the cervix, when rapidity is required, and favors Bounaire's digital dilatation. He thinks that the use of the Champetier de Ribes bags is open to the objections of being too slow, difficult in many instances as far as introduction of the bags is concerned, and uncertainty of sterility. He states that the bags are liable to rupture if sterilized by boiling, overlooking the fact that the modified bag of waterproofed silk may safely be rendered sterile in this way. Bossi's method of forcible instrumental dilatation he mentions as possessing the advantage of sterility, as the dilator can be boiled. After mentioning these theoretical objections and stating that the published reports show good results, he advocates the employment of Bounaire's method of digital dilatation. The same theoretical disadvantage would seem to apply to this as to the use of the Champetier bags, although the writer passes over this point, as the hands are quite as difficult to sterilize as the bags, boiling of the former being entirely out of the question. The cases reported number twenty-nine. The first nine done for experimental purposes, the remainder for some actual indication. The results were favorable and he considers the method free from danger. As indications for its use he names: 1. Transverse presentations, when the cervix is narrow, the membranes unruptured, external version unsuccessful, and delay unsafe; also, when the os is narrow and shows no signs of dilating, while a contraction ring is forming early and high up. 2. Rigidity of the os from scars or spasm, threatening the life of the child. 3. Unusually painful contractions of the uterus, an exceptional indication, though there are times when it appears justifiable to hasten labor in order to diminish suffering. 4. When the course of previous labors suggests that it will probably be necessary to terminate delivery by forceps. If this is due to insufficient pains, artificial dilatation of the cervix will complete a portion of the labor and conserve the mother's strength for the second stage.

Puerperal Statistics.—Constantin J. Bucura (*Arch. für Gyn.*, Bd. 69, H. 2) analyzes the statistics of Chrobak's Clinic in Vienna for seven years, 1895 to 1901 inclusive. During this period there were 23,639 births. The best results were obtained in cases not examined internally, while the figures speak almost as favorably for the groups of cases examined only after careful disinfection of the hand and avoidance of handling septic cases. This shows that avoiding contact with septic material and careful washing and disinfection of the hands can make the latter practically sterile, at least for the time required for a vaginal examination. The statistics showed a smaller morbidity among the cases washed in running water than among those cleansed by the full tub bath.

Formation of a Membrana Capsularis in Tubal Pregnancy.—Julius Voigt's (*Arch. für Gyn.*, Bd. 68, H. 3) study of six cases of tubal pregnancy from the Dresden Clinic showed in all instances a distinct membrana capsularis surrounding the ovum or mole more or less completely. This he ascribes chiefly to the sinking in of the ovum into the maternal tissue. In cases of intercolumnar embedding, the most common type, not only mucous membrane and connective tissue but also smooth muscle fibers cover the ovum. In the course of further development this capsular membrane may be partially destroyed by penetration of Langhaus' cells or by hemorrhages, leaving only bands of the membrane over the mole. In some cases of intercolumnar embedding the ovum may eat away other folds of the tubal mucosa and draw them in as a cover to itself. In none of the cases examined was any trace of decidua formation discovered. There is then no formation of a decidua reflexa, but the formation by the ovum of a capsular membrane, consisting of unchanged maternal tissue, the ovum simply penetrating and enveloping itself in the latter.

Syphilitic Lesions of the Umbilical Cord.—Josef Bondi (*Arch. für Gyn.*, Bd. 69, H. 2) has examined the umbilical cord in thirty-five cases of maternal syphilis, or of infantile syphilis, in which the diagnosis was made through the occurrence of characteristic symptoms, or from the autopsy findings in the child. In fifteen cases he found exudative inflammatory changes in the walls of the blood-vessels, edema, emigration of polynuclear leucocytes, in one case a fibrinous deposit, in two formations like abscesses in the vessel-walls. Although there is nothing specific or characteristic in such changes, he considers these lesions as indicating the presence of syphilis, as he found them wanting in all of one hundred normal cases which he examined. He holds that the practical point is that microscopic examination of the umbilical cord enables a positive diagnosis of inherited syphilis to be made in doubtful cases, and so permits early medication of the new-born.

Treatment of Labor with Contracted Pelvis.—Bruno Wolff (*Arch. für Gyn.*, Bd. 69, H. 1) presents a statistical study of 581 cases of contracted pelvis. His conclusions are that prophylactic version, high forceps, and craniotomy are of value in the treat-

ment. The improvement in the technique of symphyseotomy and Cesarean section has not displaced the procedures mentioned.

Thyreoprival Tetany in Pregnancy.—In a forty-five-year-old XV-para, whose history is given by Arthur Dierrst (*Zentralbl. für Gyn.*, No. 29) a previously existing goiter caused such marked dyspnea that the thyroid was excised. Nine days after the operation the patient began to have attacks of tetany, which ceased after induction of labor. They returned ten days after delivery. Under the use of thyroid tablets the woman felt fairly well.

Thoracopagus Tetrabrachius.—In each of two cases described by Kurt Kamann (*Arch. für Gyn.*, Bd. 68, H. 3) there were common abdominal and thoracic cavities containing a single liver and jejunum. The alimentary tract of each fetus was independent, both above and below the jejunum. The only other viscera which were united were the hearts. In one case there was a single pericardial sac containing what appeared to be a single heart, but what was really two organs closely united. In the other there was a single pericardial cavity and two hearts united only by a small solid band extending from a ventricle of one to one of the other.

Pernicious Vomiting.—The more cases Robert Jardine (*Jour. Obst. and Gyn.*, Br. Emp., October) sees of pernicious vomiting the more firmly he is convinced that the cause is a toxic one, and the poison acts through the nervous system. The cause lies in the uterus, as the excessive sickness ceases as soon as the uterus has been cleared out. In the treatment medical means should have a fair trial. Rectal feeding is of great use when everything is rejected by the stomach. When this condition exists all feeding by mouth should be stopped for ten days. The thirst is to be relieved by high rectal or subcutaneous injections of saline solution. If after ten days the stomach will not retain food, we must consider the advisability of terminating pregnancy. To delay too long is only to court disaster. The author reports three cases of pernicious vomiting in which pregnancy had to be terminated. In all the cases vomiting ceased after delivery. Two cases recovered, but the third died in a few days from a septic pneumonia, the result of a septic condition of the mouth.

Maternal Pelvis and Fetus.—Clayton A. Lane (*Lancet*, Sept. 26) states the parallelism between the size of the child's head (and in particular of the biparietal diameter) and the conjugate diameter of the mother's pelvis is the result of natural growth, and is not a pressure phenomenon. Facts gathered by the writer appear to point definitely to the conclusion that the weight of the child, and therefore the size at birth, bear a definite relationship to the size of the mother's pelvis, and that this relationship is carried so far that the biparietal diameter of the child increases correspondingly with the conjugate diameter of the pelvis through which it will ordinarily pass at birth.

Puerperal Septicemia Treated by Antistreptococcic Serum.—John M. Mackenzie and W. B. Blandy (*Lancet*, Sept. 26) are

convinced that in a case of puerperal septicemia serum alone should not be relied on, but is helpful when used in conjunction with local treatment. It greatly militates against the exhaustion, depression, and the liability to rigors which follow the douching of the uterus. They have found that the serum to keep up its effects must be given daily.

Diabetes as a Complication of Pregnancy.—Alfred Stengel (*Univ. Penn. Med. Bul.*, October) finds that diabetes may have its onset either in the first or in subsequent pregnancies. It generally comes on before the fourteenth year. There seems to be a tendency to recurrence of the condition when it has once become established. According to statistics gathered by the writer, its onset is generally early in the pregnancy. The symptoms do not vary much from those of diabetes unassociated with pregnancy. The results for both mother and child seem to be less frequently disastrous than has generally been supposed, and careful hygienic, dietetic and medicinal treatment should always be resorted to, unless the symptoms are threatening.

Two Unusual Placentas.—W. E. Fothergill (*N. of Eng. Obst. and Gyn. Soc.*, April and May) reports a case of multiple pregnancy accompanied with hydramnios. There were four children born, all of which died in twenty-four hours. Three of the placentas were fused into one mass, the fourth was separate. In another case there was a placenta previa with marginal insertion of the cord, the insertion being directly over the os.

GYNECOLOGY AND ABDOMINAL SURGERY.

Single Cuff Method of Circular Enterorrhaphy.—O. Beverly Campbell (*Jour. A. M. A.*, May 30) advocates the use of a single cuff in uniting the intestines. The cuff is made by cutting through serosa and muscularis; then these layers are dissected back for five centimeters. The bowel thus denuded is severed within one centimeter of the cuff, the other end of the bowel is severed, then the two ends are united by eight through-and-through sutures and the cuff rolled over this union and sutured in place. The cuff so covers and protects the sutures placed in the intestine that the direct line of leakage and infection is obviated.

Toilet of the Peritoneum in Appendicitis.—Stephen H. Weeks (*Am. Gyn. and Ped.*, August), when operating for appendicitis before pus has formed, removes the appendix, dries the region with sterile gauze and completely closes the external wound. When there is a circumscribed abscess the appendix can generally be found and should be removed, the abscess cavity thoroughly cleansed with gauze, then the cavity and wound should be packed with gauze. When the whole abdominal cavity is infected it should be thoroughly irrigated and sponged, a glass tube with a strip of gauze through it should be passed well down into the pelvis, and gauze strips should be passed in various directions among the intestines so that perfect drainage may be secured.

Conservative Treatment of Lesions of the Uterine Appendages.—George Granville Bantock (*Lancet*, July 25) finds that in the course of an ovariectomy it is true conservative surgery to remove the second ovary if it shows palpable disease. In cases of ectopic gestation or of salpingitis, either acute or chronic, it is advisable in the great majority of cases, if not in all, to do the double operation. The practice of ignipuncture or partial resection of a suspected ovary is not founded on specific data. It is not conservative surgery to leave an ovary in cases of complete hysterectomy. The operation of salpingostomy does not appear to Bantock to have any claim to be regarded as worthy of acceptance.

Buried Unabsorbable Ligatures.—C. Hamilton Whiteford (*Br. Med. Jour.*, July 25) condemns the use of unabsorbable ligatures. Catgut hardened by chemical reagents answers the purpose because after a few weeks it is disintegrated and as a definite body ceases to exist. The unabsorbable ligature must always be a foreign body which, as soon as it becomes infected, will cause suppuration. The soft tissues of the human body are unsuited to act as a cemetery for pieces of silk and metal.

Intestinal Resection.—James H. Dunn (*Jour. A. M. A.*, May 30) is of the opinion that suture is the most indispensable and generally applicable method of anastomosis in intestinal resection. For the end-to-end union of segments of normal small intestines, or the end-to-side anastomosis the Murphy button is excellent. Pathologic changes in the small intestine or its mesentery, which renders the perfect application of the button difficult, or such as would probably disturb the course of healing, should be united by suture. The simplest method compatible with good work should be used.

Condition of the Endometrium in Cases of Uterine Myomata.—Thomas S. Cullen (*Jour. A. M. A.*, Aug. 8) believes we can lay down the general rule that where the Fallopian tubes are normal and where no sloughing submucous myoma is present, that the uterine mucosa will be perfectly normal or show simple mechanical changes. The import to the surgeon is that where such favorable conditions are present he can do a myomectomy, opening, if necessary, a large part of the uterine cavity with little danger of infection. If the tubes are adherent or a sloughing submucous myomata be present complete removal of the uterus is indicated.

Atrophic Scirrhus of the Breast.—J. Clark Stewart (*Am. Jour. Med. Sci.*, September) feels justified in retaining the term atrophic scirrhus as describing an important clinical entity. The tumors occur mainly in women over sixty, and resemble other forms of cancer in their early manifestations, but tend to proceed slowly until the skin is involved, when they seem to cease to grow. It seems probable that the results of operation as to recurrence in this class of cases are distinctly worse than in cases of ordinary carcinoma of the breast. The disease promptly recurs in a vastly

more malignant form than before. Certain adenocarcinoma of the breast have the clinical history of the atrophic scirrhus. If more of these tumors were studied histologically they might prove to have an adenomatous element to justify their comparative benignancy.

Mammary Cysts.—Robert Abbe (*Med. Rec.*, Aug. 15) advocates the aspiration of mammary cysts as it is an easy and absolute cure. This procedure is also of value in making a differential diagnosis. These tumors are characterized by a hard swelling, deeply seated and never dimpling the skin like a scirrhous one, or drawing on the nipple. Sometimes they are flat or ovoid, and in the majority of cases not giving a distinct sense of fluctuation on palpation. They are more apt to occur between the fortieth and fiftieth years. In all doubtful tumors of the breast an aspirating needle should be used in order to make the diagnosis certain and to cure the case by aspiration if fluid is found.

Predisposing Causes of Cancer.—Robert Bell (*Med. Rec.*, Aug. 15) sums up the predisposing causes of cancer as follows: Persistent and prolonged retention of feces containing an undue proportion of decomposing albuminous material, from which intertoxins are derived, and by absorption conveyed to the blood. The blood thus contaminated produces a depraved condition of the nervous system and thus interferes with the normal action of the organs and cell metabolism, producing anemia in the young and cachexia in the elder. If the thyroid gland is at fault these toxins remain unneutralized and in a position capable of producing serious mischief. If saccharomycetes are present in the blood this toxic material is liable to undergo chemical changes, resulting in the formation of uric acid, when uric acid anemia will result. The presence of these toxins in the blood exerts a pernicious influence upon cellular structures, and confers upon them a predisposition to take on a malignant metamorphosis.

Conditions Favorable for the Advance to Full Term of an Ectopic Gestation.—The conditions favorable for the advancement to full term, according to John W. Cousins (*Br. Med. Jour.*, July 25), are: The early and continuous mobility of the ovum. Slow subperitoneal expansion of the gestation sac. The absence of urgent symptoms indicating intraperitoneal or extraperitoneal rupture. Early ascent of the fetus towards the abdominal cavity. The lateral position of the placenta in relation to the gestation sac and its upward expansion and elongation.

Value of Leucocyte Count in Diseases of the Female Genitals.—M. Dützmann (*Monatschr. für Geb. u. Gyn.*, Bd. xviii, H. 1) bases his conclusions upon about 2,000 blood counts made in 223 cases. In 90 of these the increase of white blood-cells led to a correct diagnosis of suppuration, although examination under anesthesia failed to discover purulent collections. Counts were made in 11 cases of puerperal or post-operative exudate, 22 of purulent or non-suppurative inflammatory disease of the appendages, 9 of tuberculosis, 2 cases in which pus was pres-

ent, yet the leucocyte count negative, 12 cases of myoma or carcinoma, 7 of tubal pregnancy, 10 of large ovarian cyst, 16 of puerperal and post-operative sepsis. He found the leucocyte count a reliable means of diagnosis of the presence of pus in exudative collections. In diseases of the appendages of suppurative or non-suppurative character the blood count is of value for differential diagnosis and for deciding the choice of the abdominal route. In myoma, carcinoma, and tubal pregnancy it is often the only sign of a simultaneous accumulation of pus in the abdominal or pelvic cavity. Tuberculous pus causes no leucocytosis, and gonorrheal but slight increase of white cells. In cases of large ovarian tumors, especially with torsion of the pedicle and peritonitic symptoms, there is marked leucocytosis without the presence of pus. In sepsis a persistent hyperleucocytosis indicates a favorable progress. This may furnish the indication for operative treatment in cases of puerperal fever. In eclampsia infrequent convulsions are associated with hyperleucocytosis. This points to the fact that eclampsia is an infection.

Causation of Cancer.—Alex. Theodore Brand (*Pract.*, October) thinks that cancer is an infectious disease and should be treated accordingly. He cites a case to show that cancer-cells can be transferred from one person to another, and that it is of external origin. Cancer has been transferred, experimentally, from man to man and from man to lower animals.

Hypertrophy and Erosion of the Os Uteri; a Pathognomonic Sign of Chronic Flexion.—W. J. Sinclair (*Jour. Obst. and Gyn.*, Br. Emp., September) justly ridicules the old treatment by caustic substances applied to the "ulceration" of the womb. The abstraction of blood by punctures or diminution of congestion by glycerine tampons is more rational treatment as a step preliminary to restoration of the position of the uterus. The congestion cannot be relieved unless the tampons raise the uterus up to some extent and relieve the flexion. The extent to which the hypertrophy with erosion diminishes is some measure of the beneficial effects of the treatment. When in a case of retroflexion, the uterus appears to be restored to its position and retained by means of a pessary, inspection of the posterior lip from time to time will alone show whether the success of the treatment is complete or only partial, or if relapse has occurred, owing to want of sufficient support by the pessary. Where adhesions or great enlargement of the body exist, cure cannot be effected without operation. Ventrifixation is, in the experience of the writer, a safe and effective operation for chronic retroflexion with adhesions, or with the body greatly enlarged from strangulation. Whether the operation should be resorted to in ante flexion with bladder symptoms, the writer has formed no opinion. Hypertrophy due to laceration of the cervix and flexion cannot be rationally treated by amputation of the vaginal portion. Such operations are irrational and are not justifiable during the child-bearing time of life, nor at any other, except in some cases of malignant diseases.

Pelvic Disease in the Female Insane.—Ernest A. Hall (*Northwest Med.*, September) believes that the percentage of pelvic disease among female insane is greater than is supposed. In a certain number of cases the removal of the diseased tissues is followed by restoration of the mental health. He is convinced that pelvic disease in the insane should be treated and that insanity is no excuse for the neglect of any physical abnormality. He recommends that a competent gynecologist be associated with all State hospitals for the insane.

Pelvic Exudations.—In twenty-six cases of parametritis treated by E. S. Carmichael (*Jour. Obst. and Gyn.*, Br. Emp., September) 80 per cent. were due to childbirth and the remaining cases resulted from surgical operation. The exudations were most common in the lateral parametria, more especially the left, but were liable to spread to and involve the other parametria, showing no tendency to limitations along certain lines, as some anatomical observations might lead us to suppose. The majority of cases when admitted into the hospital no longer suffered from fever, and that the presence or absence of this symptom is not a definite indication of the appearance of suppuration. In leucocytosis there is a much more reliable means of diagnosing the presence of pus, and that where leucocytes steadily increase on repeated examination, and especially when they reach the number of 20,000 per cm., or over, surgical interference is justifiable. The majority of pelvic exudations cure by absorption rather than by suppuration. The most frequent cause of suppuration is the streptococcus pyogenes. The hot air treatment has proved a very valuable addition to the therapeutics of this condition, more especially in large or very chronic exudations, or in those patients where pain and discomfort result from cicatrices and thickenings in the parametria, the remains of former exudations. The chief contra-indications to this treatment are fever, menstruation and heart disease.

Colpectomy for Uterine Prolapse.—René P. Koenig (*Jour. Obst. and Gyn.*, Br. Emp., September), in those patients beyond menopause who are willing to forego the exercise of the sexual function, and are troubled with vaginal prolapse, advises P. Müller's method of colpectomy. The vaginal prolapse must be complete, or at least it must be possible to evert the vagina completely by drawing down the uterus. This operation consists in excising the whole vagina and columnizing its bed, but leaving the uterus behind intact. The advantages of this operation are as follows: (1) The peritoneum is not opened, neither bladder or rectum endangered. (2) The operation is simple and of short duration, and can be done without anesthesia. (3) Rest in bed is required for a few days only. (4) Recurrence impossible.

Sarcomatous Transformation of Myomata.—Thomas S. Cullen (*Jour. A. M. A.*, Oct. 24) finds that myomata undergo sarcomatous changes much more often than is generally suspected. The sarcoma usually develops in one of several myomata and

may be situated in a subperitoneal interstitial or submucous nodule. Whenever sarcoma or carcinoma may exist with myomata pan-hysterectomy is imperative. Bisection of the uterus is contraindicated where there is a possibility of a malignant growth developing or associated with the myomatous uterus. In every case of hysteromyectomy it will be advisable to have an assistant open the uterus immediately on its removal to determine if carcinoma of the body exists and to find out whether the myoma has become sarcomatous. If malignancy is detected the cervix can thus be removed without delay. The clinical history is rather significant: A myomatous uterus has lain comparatively dormant for several years and the patient comes with a history of rapid uterine enlargement during the last few months. If the myoma has been submucous portions have from time to time been expelled, and there is a free offensive discharge. The patient soon becomes cachectic.

Retroversion of the Uterus.—L. H. Dunning (*Jour. A. M. A.*, Nov. 14) makes the following deductions from a series of 112 cases treated by himself. Simple uncomplicated retroversion of the uterus gives rise to but few symptoms, the chief of which are backache and bearing-down pain. Painful menstruation occurred in 37 per cent. of the cases. Uncomplicated cases constitute but 7.01 per cent. (8 in 112) of the cases studied. The severity of the symptoms and the prospect of cure depends largely on the number and character of the complications. Prolapsed and chronically inflamed ovaries, endometritis and laceration of the cervix uteri constitute the most common and serious complications. The most common complications are: Prolapsus of one or both ovaries, 42 per cent.; endometritis, 28 per cent.; laceration of the cervix, 24 per cent.; prolapsus of the uterus, 15 per cent.; adhesions, 13 per cent.; laceration of the perineum, 7 per cent.; movable kidney, 7 per cent.; ovaritis without displacement, 8 per cent. The less complicated cases yield satisfactorily to non-operative treatment. Displacements of long duration with serious complications demand operative interference which is followed by a reasonably large percentage of cures. The dangers of operative interference are small.

Tubercular Diseases of the Female Urinary Tract.—The origin of tubercular inflammation of the urinary tract, according to Edward J. Ill (*Annals of Surg.*, October) is most frequently in the pelvis of the kidney or in the kidney itself. The resistance of the bladder to the tubercle bacillus seems great, and the bladder will readily throw off the disease as soon as the original focus has been removed, even the ureter will apparently recover. The disease seems to spread by contiguity, rather than through the blood. The early and most frequent subjective symptoms are pain referred to the loin or iliac region of the diseased side, and later to the bladder. The pain may be felt along the course of the ureter. Pain at urination always means infection of the bladder. The infection is most often at the trigonum and the meatus of the ureters. In old cases difficulty to retain urine, after the desire to

pass it once comes on, means an infection of the neck of the bladder. Every case of pyuria should be examined for tubercular bacilli when the cause cannot readily be ascribed to some other infection. The sensitiveness of the bladder to the touch per vaginam is an important symptom in vaginal tuberculosis. As we pass the finger up the anterior wall of the vagina to the cervix and then direct it, with its palmar surface forward, to one and then to the other side, we may find a thickened ureter. The normal ureters can nearly always be felt as very thin cords converging towards the neck of the bladder and losing themselves little less than an inch above the internal opening of that organ. If the finger is placed at the side of the cervix and close to it, the outer edge of the finger will correspond to the location of the ureter. The ureter, when it is thickened and inflamed by tubercular disease, becomes a very sensitive cord. In the beginning, the ulcerated surface is surrounded by small blisters, as a fine herpetic eruption might appear. When these objective symptoms appear, coupled with such subjective symptoms as given above the diagnosis is certain. The prognosis is generally considered bad, although there are cases which appear to get well. One can conscientiously recommend the operation of nephro-ureterectomy in those cases where tubercular process is confined to the ureter and kidney, or that have originated in those organs. The above mentioned facts are illustrated by fourteen cases reported by the author.

Abdominal Hysterectomy.—Howard A. Kelly (*Jour. Obst. and Gyn.*, Br. Emp., October), when treating a pelvic abscess with extensive adhesions which involves one side only, begins on the easy side and carries the incision down to the uterine artery, across the cervix and then controls the opposite uterine vessels, and then continues up the broad ligament either on the mesial aspect of the adherent structures or between the mass and the pelvic wall. When there are adherent masses on both sides we employ the bisection method, splitting the fundus down into the cervix and then dividing the cervix horizontally to expose and control the uterine arteries. Then either half may be removed separately. When the body of the uterus is buried under adhesions, the enucleation can be done by exposing the cervix behind the symphysis by pushing the bladder down and then dividing the cervix horizontally so as to detach the uterine body and control the uterine vessels. Now the uterus may be removed en masse or bisected from below upward.

DISEASES OF CHILDREN.

Practical Note on the Diagnosis of Infantile Eclampsia.—John Zaharcky (*Pediatrics*, August) holds that it is rare indeed that a peripheral irritant will cause convulsions without a heightened irritability of the nervous system. The most important diagnostic inquiry then is not as to the peripheral irritant, but what is the condition inducing the heightened irritability and what are

the etiological factors back of it. It is sufficient to remember these states which may cause heightened irritability, viz., high fever, malnutrition and disease of the brain. His method of procedure is as follows: Having subdued the most violent convulsive movements by appropriate treatment (chloroform, bath, etc.), he takes the rectal temperature. In the vast majority of cases, high fever (103° - 109° F.) will be found to be present. It is the fever or the toxemia that induces the fever that gives origin to the heightened nervous irritability. Excluding thermic fever, and the elevation of temperature which accompanies grave injuries to the brain, we regard the fever as the symptom of an infectious disease, and by other symptoms and signs its location and nature must be determined. When very little or no elevation of temperature is present, we must look for malnutrition. The child has been fed on proprietary foods, condensed milk, sterilized milk, and shows evident signs of rickets. The border line between general toxic and clonic spasms in rickets and infantile tetany is not clear, and we are compelled to regard them all as allied to tetany. As a clinical aid, too, it is convenient to have a distinct name for the convulsions due to infectious diseases and cerebral diseases and those due to rickets. For the treatment of the first variety is a reduction of the temperature, and the combating of the infectious processes; in the latter variety, only an anti-spasmodic with proper dietary measures is effective. It is absolutely necessary that the practitioner sharply distinguish between the great irritability of the nervous system due to high fever and that caused by faulty nutrition. Finally, a toxic, circulatory, organic, or functional disease of the brain or meninges must be considered in the diagnosis of infantile convulsions. This is made in the interval of the convulsions by the presence of marked cerebral symptoms, examination of the urine, etc. In conclusion, the author gives the diagnoses of some of the cases of convulsions which have come under his observation in the last few years: I. Cases associated with high fever. Thermic fever, 2; malaria, 3; meningitis, 4; influenza, 5; scarlet fever, 1; gastro-enteric infection, 3; tonsillitis, 2. II. Cases associated with little or no fever. Rickets, 8; epilepsy, 2; cerebral syphilis, 1; brain tumor, 1; hydrocephalus, 1.

Principles of Infant Feeding as Based on the Evolution of Mammals.—Henry Dwight Chapin (*Arch. of Ped.*, July) thus summarizes the results of his researches into the subject: (1) An infant undergoes three stages of development and nutrition: (a) Pre-placental. (b) Placental. (c) Mammary: and should be looked upon as attached to the mother in all three. (2) At the beginning of the mammary stage, an infant has only the rudiment of a true stomach. (3) During the period of mammary development, the mother first changes the character of the infant's nourishment from colostrum to milk, and then the infant's digestive secretions so change the character of the milk, that, as the digestive juices increase in quantity and strength, the work of digestion is not thereby lessened, but rather increased, as the stronger the

gastric juice becomes, the tougher the milk curds become, owing to the acid combining with the curds. (4) The milks of all animals will produce good tissue. They differ in composition according to the rate of growth of the young animals. Their proteids differ in accordance with the type of digestive tract they are to develop. (5) No known method of procedure will convert cow's milk into human milk. All methods of artificial feeding must have in view the production of food that will adapt itself to the developing digestive tract. All substances aside from breast milk are foreign to the infant's digestive tract, and may at times cause disturbance. (6) In artificial infant feeding, certain minimum quantities of digestible proteid, fat, carbohydrates and mineral matter are needed. The mean composition of breast milk will serve as a general guide to the nutritive requirements of infants. (7) Milk must be the basis of an infant's food, not alone because it contains animal proteid, but because it contains the only available form of proteid that possesses the function of developing the digestive tract. (8) The proteid of cow's milk, which was intended to develop a calf's stomach to digest grass, must be modified or adapted to the infant's stomach. (9) This may be done by chemically or mechanically altering the character of the curds, by diluting milk with either alkalis or gruels. (10) When, for any reason, a sufficient quantity of proteid of cow's milk cannot be given, it must be supplemented by other forms of nucleo-albumins until the normal quantity can be digested. It is a gross error to feed too low proteids of milk simply to overcome indigestion.

Prolonged Withdrawal of Food in Certain Cases of Intestinal Disorder.—Thomas D. Parke (*Jour. Am. Med. Assoc.*, June 20) desires to put on record, *first*, that infants can safely be deprived of all food except water for much longer periods of time than has been advised in the text-books; *second*, the value of the procedure in the management of severe cases. He reports two out of a number of cases, one of them being that of an infant ten months old, ill with ileo-colitis, which was kept for five days on water; baths being employed for the reduction of temperature. At the end of these five days the very serious question arose as to whether it would be justifiable to keep an infant of ten months any longer without food. Again unexplored territory had been reached. Egg albumin water was given once only to the amount of three ounces. The symptoms were all aggravated by it within a very few hours, and thereon the resolution was formed, with the consent of an intelligent father, to persist in keeping all food from the child till the symptoms abated or the child was beyond any hope. After three more days—that is, eight days in all—the fever having abated and the stools changed, diluted food was given and the child went on to recovery. The most surprising observation made was the failure of this little patient to fall away to a skeleton after such prolonged fasting. It is regretted that no weights were taken, but to preconceived ideas it was simply a revelation how the child could retain so much flesh. Not that the

child did not lose flesh, for it did, but merely that the loss was not commensurate with preconceived notions and was a source of general remark to such parties as saw it and knew the history of the case. During the last four seasons no case of acute intestinal disorder seen during the first week has been lost, save one. This was a case of multiple ulcers of the stomach, accompanied by convulsions, persistently high temperature, extreme tympany, no vomiting or diarrhea, and in which the correct diagnosis was made by means of a post-mortem examination. The favorable outcome of some apparently desperate cases, during these four seasons, has engendered confidence that in the extension of this recognized procedure we have a valuable help. The prolonged withdrawal of food is not advocated in every case indiscriminately, nor even in the majority of cases. In the vast majority, if seen early, a withdrawal of a few hours until Nature or a laxative empty the intestinal tract of offending material, will be all that is required. What is contended for is that each case be individualized—be managed in accord with the indications furnished by tongue, by tympany, by temperature, by stool. What is contended for is that these little patients, ill with the severer forms of intestinal disease, will be more comfortable, will live longer, will recover more quickly on water than they will on food of any description that a disturbed intestinal tract can not assimilate. The text-books tell us to keep them forty-eight hours on water, then to put them on gruels, broths, whey. The contention of this paper is that not time, but the character of the stools, the condition of the patient, be the limit for a return to food.

The Safranin Test for Sugar in the Urine of Children.

—W. S. Christopher (*Jour. of Am. Med. Assoc.*, June 20, 1903), from the result of his experimentation, reaches the following conclusions: (1) Safranin is a reliable and convenient test agent for sugar in urine. It is sufficiently delicate to show the variations in the so-called "physiologic sugar" in urine. (2) Safranin is decolorized by sugar, but not by uric acid, creatin, creatinin, chloral, chloroform, hydrogen peroxid, albumin (except slowly), morphia or rhubarb. (3) The safranin index is the number of c.c. of a 0.1-per-cent. aqueous solution of safranin, decolorized by 1 c.c. of urine. (4) The normal safranin index is low during the first year of life, but gradually increases, reaching its maximum between 3 and 4 years of age, after which it slowly decreases for a number of years, but never becomes so low as during the first year. (5) *During* the first ten years of life boys have a safranin index constantly higher than that of girls. (6) At 11 years of age the safranin index curves of the two sexes cross, the girls becoming superior. This is probably a pubescent phenomenon. (7) The curves of average urea percentages, by ages and sexes, closely resemble the corresponding safranin curves, being low during the first year, rising to their maxima at three years, descending slowly thereafter, with the boys superior to the girls from birth to puberty, and then the girls superior. (8) The curves of the acidity

indices resemble in a general way those of urea and safranin. (9) The ratios between the average urea percentages and the safranin indices show the relative amount of physiologic sugar excreted to a given amount of urea. The excretion of physiologic sugar is relatively high during the first year of life, lower during the next four years, and still lower during the next six or seven years. At puberty there is a relative increase in the excretion of physiologic sugar in girls. The data are lacking to determine whether this is true in boys. (10) The ratios between the average urea percentages and the acidity indices show considerable irregularity, which is probably fortuitous. On the average the ratio is about 1.2. (11) Urine with a safranin index of 5 will generally show sugar by the copper test. (12) The safranin and acidity indices vary greatly from day to day. In general the safranin and acidity accompany each other. Occasionally high acidity precedes high safranin by a day. In general high safranin does not last more than two or three days. High acidity not infrequently persists longer and may occur independently of a high reaction. High safranin rarely appears independently of high acidity. (13) The average safranin index of all children's urines examined (3,481 in all) was 1.81. (14) Ten is the minimum number of urinalyses necessary to determine the average safranin index of a child. (15) A child whose average safranin index (founded on not less than 10 examinations) is 2 or more, may be said to be of the saccharin diathesis. (16) The saccharin diathesis was present in about one-third of the children whose urines were examined a sufficient number of times to formulate their average safranin index.

An editorial (*ibid*) says that it is a well known fact that human urine, even in perfect health, holds in solution some constituents which act as reducing agents toward metallic oxids and other easily reducible compounds. Uric acid and various nitrogenous waste products of the alloxur—or purin—group possess such reducing properties. The most important morbid urinary constituent having a reducing action is, of course, dextrose. While it is extremely easy to identify larger amounts of dextrose in urine, it is almost impossible to do this if traces only are present in this complex fluid. Hence it is still an open question whether human urine in perfect health, and provided also that the ingestion of sugar has not been in excess of a certain physiologic limit ever contains any dextrose. For many years attempts have been made to find a reagent capable of indicating beyond a doubt small amounts of dextrose in urine, but not affected by uric acid, kreatin and other bodies of this type. Safranin was first recommended as such a reagent in 1888 by Crismer, and it was then claimed that uric acid, kreatin, chloral hydrate, chloroform, hydrogen, peroxide and hydroxylamin, all of which reduce oxycuprihydrate in Fehling's solution, do not reduce safranin. The safranin test, however, has never become very popular, nor has it been used extensively by individual investigators, in spite of the fact that the reagent is easily obtainable, and the technic of the test simple. Safranin is

one of the aniline dyes. It is chemically an amidoderivative of phenylphenazonium, is deep reddish-yellow in solution, and has been used extensively by botanists, zoologists and biologists in general as one of the best nuclear stains in the study of karyokinesis. The test for sugar in urine is made by using a 1 to 1000 watery solution of safranin, adding to it a certain volume of a solution of sodium hydroxid, then varying amounts of urine. The mixture is then carefully heated to below the boiling point, and the presence of sugar is indicated by a change in color from the intense reddish-yellow to a pale straw or amber-yellow. The oxygen of the air soon, however, reoxidizes the reduced safranin. Christopher has for a number of years been using the safranin test as a matter of routine, and in a systematic manner in every urine examination, and he has tabulated his findings of 3,481 cases. His results are extremely interesting and highly suggestive. They show among other things, detailed in the paper, that the reducing power of urine in children varies within wide limits (excluding, of course, cases of obvious diabetes from these considerations). Christopher has perhaps not established beyond a doubt that the reducing body indicated quantitatively by safranin is indeed dextrose, but whether it is or not, the figures obtained from so large a material as his must mean something, even if we are not at once in a position to give a correct etiologic interpretation. If, indeed, the reducing body were sugar, a new question will arise as to the origin of this sugar in the urine of children. We know now that sugar may make its appearance in urine from either one of several causes, viz.: (1) The lack of the proper oxidizing agent, normally probably an enzyme furnished by the islands of Langerhans of the pancreas (pancreas diabetes). (2) The overloading of the blood with sugar by an over-abundant conversion of the reserve glycogen of the liver into dextrose (hepatic glycosuria), and (3) morbid changes in the secretory renal epithelium in consequence of which the kidney becomes pervious to sugar (renal phloridzin glycosuria). Whatever the final interpretation of Christopher's results may be, his careful and suggestive work furnishes valuable data in demonstrating certain deviations from the normal metabolism, measured in terms of reducing bodies found in the urine of sick children.

Tuberculous Peritonitis in Childhood.—Alfred Friedlander (*Cincinnati Lancet-Clinic*, July 4.) says that the diagnosis of this affection is often, though not always, a matter of extreme difficulty. In view of the good results that have followed laparotomy in many cases, and in view of the comparative safety of exploratory incision, in competent hands, there are many who have no hesitancy in recommending this procedure in cases of doubt. Many, however, hesitate to resort to it. When there is ascites, the withdrawal of some of the fluid by simple paracentesis may be of value diagnostically. The cytological examination of tuberculous peritonitis has shown that this fluid shows the same characteristics as are found in tuberculosis of other serous membranes.

Predominance of the mononuclear lymphocytes points strongly to tuberculous inflammation, while excess of polymorphonuclears is evidence of a purulent inflammation. Pure lymphocytosis is especially common in the slowly developing chronic forms of tuberculous peritonitis in children. Another aid to diagnosis is the employment of tuberculin, which is perfectly safe if the dose is small enough. Recently agglutination tests with ascitic fluid have given positive results in tuberculous cases. As to treatment, laparotomy offers the best chances in the ascitic cases. But the ascitic cases offer the best outlook under any plan of treatment. There is no doubt that laparotomy is of great value in some cases, as for instance, in case of localized abscess. But a study of the literature forces one to the conclusion that its routine employment is not to be recommended. It appears fair to say that in simple cases, either of the ascitic or fibro-adhesive variety, the attempt should be made to strengthen the patient's resistive powers and to improve the general condition by the medical and hygienic measures now in vogue before resorting to the operation of laparotomy. It is not to be forgotten that the operation is a serious one, not to be undertaken without a due consideration of its possible deleterious effects.

Serum-therapy in the Typhoid Fever of Children.—Alberto Josias (*Med. Press*, July 29) says that it is fair to conclude from the experiments made with the anti-typhoid serum of Chantemasse, on animals, that it possesses both antiphlogistic and curative properties. It intensifies the activity of the phagocytes and leucocytes, and stimulates their production, and it also appears to have a physiological excitant action on the lymphatic system. To secure its therapeutic action it should be administered early in the disease, and in doses sufficiently large to counteract the severity of the attack. As to its action on man, the statistics of the Hôpital Bretonneau, in which the anti-typhoid serum is used, and other hospitals in which it is not used are as follows: March 1, 1902, to March 1, 1903. Hôpital Trousseau, 67 cases with 13 deaths; Hôpital Herold, 20 cases with 3 deaths; Children's Hospital, 82 cases with 8 deaths. Total number 169 cases, with 24 deaths, or 14.2 per cent. At the Bretonneau for the same period: In care of Dr. A. Josias, 50 cases with two deaths, or 4 per cent. These statistics establish beyond a doubt the value of anti-typhoid serum. The use of cold bottles at 72° F. is of the utmost benefit, materially assisting in producing good results.

Medical Treatment of Dysmenorrhea.—Frank C. Hammond (*Amer. Med.*, Aug. 29) divides the medical treatment of this condition into three groups: (1) The prevention of the attack, (2) the treatment of the attack, (3) and afterwards. (1) The prevention—In cases dependent alone upon congestion pain can be frequently prevented by saline purgation the day of or the day previous to the flow. The tincture of gelsemium in 10-drop doses three times daily for seven to ten days previous to the flow will often afford absolute or marked relief. Apiol, cimicifuga and

potassium permanganate are also worth trying. (2) The treatment of the attack—Rest benefits all cases, hot vaginal or rectal douches and a hot water bag over the abdomen afford a certain relief. The fixed violent boring pains due to myomas may be controlled by suppositories, belladonna, hyoscyamin or antipyrin. For neuralgic pains, phenacetin, antipyrin, gelsemium and like drugs are of use. When congestive or inflammatory with endometritis or parametritis, warm clothing over the abdomen and hot sitz-baths should be ordered, with free purgation and local depletion by copious hot vaginal douches. The medical treatment the same as for the neuralgic pains. The tincture of piscidia erythrina and tincture of hydrastis are also used to advantage. Opium should be used only as a last resort. Alcohol is often of marked value, but its use may lead to alcoholism. When the flow is scanty, hot sitz-baths with mustard added may be used. When the dysmenorrhea is due to vasomotor spasm, nitroglycerin $\frac{1}{100}$ repeated in an hour will usually afford immediate relief. It should be borne in mind that the pain may be due to appendicular colic. (3) Treatment between attacks—The general health should be promoted. When there is lack of uterine tone use strychnine or hydrates. Pelvic congestion should be depleted. Intrauterine medication is not to be recommended except for membranous dysmenorrhea. Electricity has its advocates. In all cases in which there is a demonstrable pelvic lesion, medical treatment is only palliative; surgical measures are necessary to effect a cure.

The Milk Supply of Copenhagen.—An editorial (*Arch. of Ped.*, Aug., 1903) calls attention to a report prepared by de Rothschild at the request of the French minister of agriculture upon the subject of the milk supply of Copenhagen. The report deals especially with the operations of two companies, the Kjobenharus Maelkeforsyning and the Danske Maelke Compagni, the former dealing in fresh milk, the latter in pasteurized milk. The former is declared to have served as the model not only of its rival and neighbor, but also of many similar concerns founded in foreign lands.

The most unusual feature in the workings of this company is that it takes no direct part in the production of the milk that it sells. All its milk is obtained from farmers living in the immediate neighborhood of the city. Its control of the quality of the milk is effected entirely by means of the contracts that it makes with the farmers. These contracts stipulate that the farmer shall observe most rigid regulations with regard to the healthfulness of the cattle whose milk is to be offered to the company, their feeding and care in general, the care of the milk after it is drawn, the hygiene of the stables, the health of the employees, the cleanliness of the milking process, and every circumstance known to influence the chemical or bacteriological purity of the milk. Compliance with the stipulations of the contracts is assured both by tests of the milk received and by frequent visits of inspectors of the company to the farms and dairies. The milk thus obtained is delivered

to stations from which it is collected and brought to the main establishment in the city. The hours of milking, the cooling of the milk, the time of delivery to the collecting stations, etc., are all regulated by the contracts. The milk is transported in cans. Upon their arrival in the city these cans are opened, the temperature, specific gravity, etc., taken to assure that the milk complies with the required standard; and, whenever advisable, specimens are subjected to bacteriological examination. One unusual step in this relation is the tasting of the milk by the official "taster." Any milk having an unnatural taste is rejected. After the inspection the milk is filtered through several layers of sand and then filled into bottles or cans for delivery to the customers. The delivery is made by wagons specially adapted to the purpose and owned by the company itself. Every can or bottle bears a tag showing the date upon which it was put up. Due provision is made for the cleansing of the empty cans and bottles, but apparently they are not sterilized. The company also furnishes a modified milk for infants. This milk comes from selected cows and is looked after with special care. The mixtures offered are only four in number, one of milk to two of water, equal parts milk and water, two parts milk and one water, and three parts milk to one of water. The two first mixtures are put up in bottles holding 135 and 150 grams; the two last in bottles holding 175 and 180 grams. The milk is pasteurized at 85° F., for one-half hour. The company also sells cream and skimmed milk. Whatever milk remains unsold at the end of the day is promptly made into butter. The whole milk is sold for a trifle over 4.5 cents a litre. The company handles about 30,000 litres per day. The peculiar features of the work of the other company are that it gets its milk from a greater distance, that by certain patent methods the milk is partially frozen for transportation, that upon arrival in the city it is warmed, filtered and finally pasteurized. In other respects the methods of dealing with the milk are practically the same as those of the original concern. The Danske Maelke Compagni uses about 60,000 litres daily, so that between these two companies about 100,000 litres of milk of guaranteed purity are daily supplied to Copenhagen. De Rothschild contrasts the milk supplies of Paris and Copenhagen in a manner very favorable to the latter. The Kjøbenhavns Mælkeforsyning was originally founded as a philanthropic society, but has since been put upon a purely business basis, and these two companies are now engaged in the purveying of pure milk as a paying business. In this fact as well as in their methods lies much of interest and instruction for us. What is practicable in Copenhagen must be practicable in every city in this country. If philanthropy will not lead dairymen to produce pure and clean milk, the interest of their pockets ought surely to do so. The educational work being done all over the country will result in larger demands for milk of a guaranteed character, and we may be sure that the dairymen will meet the situation. It is a source of just pride that

physicians are everywhere in the United States the leaders in this movement, of such vital importance to the whole community.

Strangulated Inguinal Hernia in a Child Eleven Days Old.

—J. Hutchings White (*Med. Record*, Aug. 22, 1903) discovered a "lump" in the child's right groin the fifth day after birth. Upon examination it proved to be a hernia. Reduction was accomplished under chloroform. The necessary precautions to guard against recurrence were taken, notwithstanding which on the eleventh day the author was called to see the child in the afternoon. The hernia had been down since 9 a. m. Taxis with and without chloroform, and placing the child in an inverted position with flexed thigh, all proved fruitless. Hot compresses were placed on the hernia and the child allowed to rest until evening. No vomiting occurred, and with the exception of being a little fretful, the child seemed rather free from pain. In the evening taxis again proving ineffectual, it was decided to operate. A much congested gut was found, which was very blue. The use of hot applications, however, put new life into it. Reduction was effected, sac tied and cut off, and the abdomen closed. The little one's condition was critical for a few days, but he rallied and made a favorable and complete recovery. Certainly, says the author, the child's condition was critical, as proved by the condition of the gut, yet there was an absence of vomiting and very little pain. The conclusions are therefore that it is not always wise to wait for urgent symptoms, but in those cases in which it is impossible to reduce under anesthesia, a recent hernia, especially in young children, operation is indicated. Congestion is increased on standing, and gangrene may take place in one hour, or it may not take place for twenty-four hours. The author believes this to be the youngest herniotomy case on record.

Sudden Death and Unexpected Death in Early Life with Especial Reference to the So-called Thymus Death.—J. P. Crozer Griffith (*Amer. Med.*, June 20, 1903) says that the term

"sudden" may be used to indicate a death occurring in from a few seconds up to a few hours at the utmost, while "unexpected" may be conveniently applied in this connection to the deaths taking place somewhat more slowly, and yet entirely unexpectedly in patients who had previously shown no alarming symptoms or any reason why a fatal issue need be apprehended. Occurring in either of these methods, death is not infrequent at any age, but is especially common in the first two years of life. Among the more prominent and interesting causes are conditions affecting the respiratory apparatus; *coryza* occurring in the newborn may rarely be the cause of sudden death by what has been described as aspiration, or swallowing of the tongue. By the violent efforts at breathing through the mouth the tongue is drawn backward and its inner surface and tip become pressed against the hard palate, cutting off more or less the entrance of air. Death in the same way is said to occur in young infants with pertussis. *Asphyxia from overlying* has been long recognized. Most infants believed

to have died in this way have probably died from other causes. Weakly children born with a certain degree of asphyxia are exceedingly prone to suffer from a fatal relapse after all danger is supposed to be over. *Spasm of the glottis* has appeared to be one of the prominent and most startling causes of sudden death. It depends on the very great irritability of the nervous system oftenest seen in debilitated or rachitic children, but sometimes occurring quite independently of such conditions. It is probable that many cases of death attributed to other causes in reality depend upon this. Perhaps still oftener, however, death only *seems* to be the result of laryngospasm, but in reality is dependent upon syncope. Much has been written concerning the possibility of the occurrence of death due to enlargement of the thymus gland. The whole subject is still in a state of discussion, and nothing can be definitely stated in regard to it. One fact does, however, remain clear, that there is a certain constitutional anomaly seen in some children, and even in adults, which predisposes to sudden death from trivial causes. It is true that enlargement of the thymus and of other lymphatic tissue is very often seen in these cases, but whether these are accidental accompaniments or not is uncertain. The constitutional disturbance depends on a state of faulty nutrition. Not that there is any wasting of the child, but that the condition of metabolism is in some way at fault. It is attended by pathologic disturbances of the nervous centers, giving this system an extreme irritability. The nerves controlling the action of the heart are, of course, involved, as are also to some extent those controlling respiration. The author gives a list of diseases which are apt to have a sudden fatal ending, and reports a number of illustrative cases.

Eleanor C. Jones (*Arch. of Ped.*, Aug., 1903) reports the case of an infant of three and a half months, which had a slight elevation of temperature and somewhat rapid breathing, although the lungs were normal. It died during its sleep, without outcry or struggle. At autopsy the thymus gland was found to be much enlarged, extending over the pericardium to its lowest border. The length of the gland was 7 cm. and at its widest part it measured $3\frac{1}{2}$ cm. and was 2 cm. in thickness. The bronchial lymph nodes were much swollen. The mesenteric lymph nodes were soft and much enlarged, as were the inguinal lymph nodes. The spleen was enlarged, measuring 4 cm. by 7 cm. The liver was enlarged and showed areas of fatty degeneration. Lung, heart, kidneys and intestines were normal.

In the past few years much has been written concerning the relation of enlarged thymus gland to sudden death in infants. Different writers have been divided in their views. That the gland can enlarge sufficiently to produce death by pressure on the surrounding parts seems to be proved by cases reported by Koenig, Siegel, Jacobi, Grawitz and others. Jacobi, in his monograph on the gland states that in an infant of eight months the distance between the manubrium sterni and the vertebral column is only

2.2 cm., a space which he thinks might be completely filled by a large and congested thymus. Some of the German writers believe that death is caused by pressure on the trachea or on the heart or great vessels; others believe that death is caused by pressure on the nerves, especially the recurrent. Paltauf, of Vienna, denies that the enlarged thymus can cause death by pressure. He thinks the enlarged thymus is only one of the symptoms of a disturbed nutrition. He describes a condition which he designates as "status lymphaticus," in which all the lymph nodes, the spleen and thymus gland are in a state of hyperplasia. This condition, clinically, is characterized by a lowered vitality and unstable equilibrium, and this constitutional anomaly is attended, he thinks, by changes in the nerve centers controlling the action of the heart, so that paralysis of the heart may ensue from very slight causes. Beneke, summing up the different views, believes that sudden death with thymus enlargement may occur in three ways: First, compression of the trachea; second, laryngo-spasm (a convulsive condition not due to pressure); third, a lymphatic constitution.

Sulphocarbonate Treatment of Cholera Infantum.—William F. Waugh considers this remedy a specific for cholera infantum, enterocolitis and summer complaint in infants. He has used it with unvarying success for the past twenty-five years. His routine of treatment is the following: Clear out the bowels with castor oil, calomel, mercury and chalk, aromatic rhubarb, lavage or colonic flushing, as seems best in each case. For lavage he prefers a solution of zinc sulphocarbonate, a grain to the ounce; for colonic flushing the same as for rectal flushing, or when the type is dysenteric, silver nitrate, two grains to the pint. The solutions should be as hot as bearable. Then follow with the zinc salt, from one-sixth to two grains every hour. He has given the latter dose hundreds of times to children in their second summer without irritation. Some take the medicine in solution, others in granule or tablet form, but if there is decided irritability of the stomach it is best in powder with bismuth and pepsin. Where there is extreme acidity marked by excoriation of the rectal mucosa, etc., sodium sulphocarbonate is preferable; or the triple salts, zinc, sodium and lime may be used with advantage. The zinc should be begun whenever an unhealthy stool is passed, and continued until the discharges have lost all fetor. The best diet is the raw white of egg in ice water, coffee, rice water, barley water, toast water, followed by meat soups and fruit juices. The juices from lean fresh beef squeezed out in a lemon squeezer can be given in five to ten drop doses hourly, and in extremely debilitated conditions should be dropped on the tongue drop by drop and allowed to trickle down into the stomach. Many a child's vitality can be supported only in this way while curative measures are being carried out. Hot, cold and salt baths are always indicated. The author says that the weak point in his argument is that he is unable to explain the manner in which the remedy acts. Many years ago Wood called attention to the fact that when ani-

mals were given the sulphocarbolate of zinc their bodies resisted putrefaction for unusual periods. However they act, the fact remains that clinically they cure, and this the author thinks a quite sufficient reason for their employment where indicated.

The Surgical Features of Perforation of the Intestine in Typhoid Fever in Children.—Charles A. Elsberg (*Amer. Surgery*, July, 1903) reports an operation on a child three and a half years old for perforation of the intestine. Recovery followed. The author states that this is the youngest child on record to have been operated on for typhoid perforation. A study of the disease in a number of cases shows that there is no essential difference between the symptoms of perforation in children and in adults. Sudden pain or increase of the existing pain is generally the earliest and most prominent symptom, perhaps with abdominal tenderness and rigidity. Changes in the temperature and pulse, leucocytosis, vomiting, diminution in the area of liver-dullness, etc., have in most cases only confirmatory value. The collapsed appearance which is presented by many adults with typhoid perforation is rarely seen in children except in the presence of advanced peritonitis. As a moderate amount of tympanites is more apt to be present during the entire course of the fever in the young, a slight increase in the distension may occur at any time without having any significance, and with this there may be a diminution of the area of liver-dullness, due solely to the distension. In most cases it is not one or the other symptom, but the *ensemble* of symptoms, which must lead to the diagnosis. Of the 289 operations for typhoid perforation of the intestine collected by the writer, twenty-five were in children, with sixteen recoveries, or 36 per cent. mortality. In adults the mortality was 77.6 per cent. Therefore the chances of recovery are more than twice as good in children as in adults. The author believes that the only positive contra-indication to the operation is a moribund condition of the patient. Much depends upon an early diagnosis, and further improvement in operative results will surely follow advances in diagnostic methods. The most important point to be kept in mind in the consideration of the operative methods for typhoid perforation is that rapidity is necessary for successful results. Children bear operations on the abdomen as well as if not better than adults, if the manipulations be not too much prolonged. A light chloroform anesthesia is preferable to local anesthesia in children. Not only is it difficult to keep children quiet under local anesthesia, but there is more danger of shock no matter how much morphine the patient has received before operation.

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ORIGINAL COMMUNICATIONS.

THE ETIOLOGY OF THE ISCHURIA IN RETROFLEXION
OF THE GRAVID UTERUS.

BY

CHARLES B. REED, M.D.,

Assistant Professor of Obstetrics, Northwestern University Medical School; Associated
Obstetrician Chicago Lying-in Hospital; Obstetrician Cook County Hospital.

IN looking over the literature it is noticeable that a great many explanations are put forward to account for urinary retention in cases of backward displacement of the pregnant uterus. In this fact lies sufficient evidence that none of them entirely meets the anatomical or physiological conditions. Investigation also shows that it is not only impossible to make the various explanations satisfy the existing conditions in all particulars, but that most of the reasons assigned are in and by themselves open to very serious objections.

In one case it is assumed that the presence of the displaced cervix results in a definite anatomical change in the bladder—the formation of a valve-like fold, spur or tongue on the posterior wall, which is so developed that the catheter meets with no opposition while the outflow of urine is effectually prevented by the action of the valve (Zweifel).

This proposition is indefensible, for as Keitler shows, in a retroversion of the second degree where the cervix is pressed

against the symphysis and the fundus lies in the excavation, the conditions are all present for the formation of such a valve and yet no retention occurs. Furthermore, with an enormous distention of the bladder, such a fold would be obliterated and the condition would be spontaneously relieved.

Undoubtedly such a fold or valve would be present for quite a long period of time and ought to be demonstrable post mortem in some cases at least. It is noticeable, however, that usually the beginning of ischuria is very sudden, which would exclude valve formation as a cause unless it could be shown that such a spur could arise in a very short time.

Olshausen looks upon "kinking" of the urethra as a frequent etiological factor, but in this case also the abdominal evolution of the overfilled bladder and accompanying tension of the urethra and adjacent connective tissue would spontaneously overcome the obstruction. If the cervix is pressed against the neck of the bladder, and the fundus, weighted with a growing ovum, constitutes the other end of the lever, it is hardly possible for a "kink" to occur since a kink can only appear where the tube is long enough to bend upon itself, and in the instance mentioned, if any effect whatever is produced, it could only be that of tension and this would tend to prevent, rather than favor the formation of a "kink."

This very condition of tension on the urethra is also urged as a cause of ischuria. Thus it is claimed that the leverage exerted on the neck of the bladder by the cervix so elongates the urethra that its calibre is diminished and even occluded, just as great tension on a rubber tube diminishes and finally obliterates the lumen. The union between the uterus and the bladder is quite close, but in pregnancy this septum freely participating in the general physiological loosening of the connective tissue in the pelvis could easily accommodate itself to the traction exerted. There would be definite anatomical evidence of trophic changes in the tube wall, and the os urethræ, for a time at least, would be drawn in by the traction while the reduction in the size of the tube would be demonstrated when the catheter was used. No such condition has been observed.

It is no doubt true that the urethra in the presence of backward displacements is very much longer than normal—so long that a male catheter is required to reach the bladder. It is also true that the same condition is found in a normal pregnancy many times, for as the uterus grows upward, the bladder partially fol-

lows, a definite tension is exerted upon the urethra and it becomes elongated. Furthermore, this all happens in physiological cases without undue tension on the tissues. The over-fullness of the bladder also aids in the production of a higher position of the organ at times.

The urethra is capable of a dilation which will admit the index finger without serious injury to the elastic fibers (Hart), and could be readily drawn out in length without a perceptible diminution of its caliber. This is particularly easy during a pregnancy with its associated softening of the tissues. When such traction occurs, the resulting irritation of the sensory nerves will usually produce a *frequency* of micturition rather than ischuria.

The elongation of the urethra keeps pace with the upward growth of the bladder and is a result rather than a cause of the distention.

Another etiological factor which has been most frequently mentioned by writers on this subject, is the direct compression of the urethra and neck of the bladder by the displaced cervix, the result being a mechanical occlusion of the canal. If the occlusion of the canal by direct pressure is so simply produced, it should be possible to find numerous instances where occlusion follows other forms of compression. Thus fibroids of the cervical region very frequently develop so that they compress the urethra and neck of the bladder, but ischuria does not result unless the growing tumor becomes incarcerated in the pelvis as in Vahle's case of myoma of the fundus. The same is true of cysts of the ovaries prolapsed into the cul-de-sac, but the pressure of the incarcerated tumor occurs earlier here than with the slow growing myoma.

Were the urethra, or neck of the bladder compressed enough to produce occlusion of the lumen, pain during micturition would be a prominent symptom until the detrusor urinæ was unable to overcome the obstruction and the retention became complete. Gottberg reports a case of this kind due to atresia of a septate vagina and bicornate uterus with hematoma. In this case the symptoms appeared with gradually increasing intensity as the case developed, and not suddenly as in every case of retroflexion. Furthermore, compression by tumors even to a mild degree, as for instance enough to mechanically close the canal and keep the walls in apposition, could not be continued a great while without resulting in trophic disturbances at the point of greatest pressure, and ultimately in necrosis as in Vahle's case.

In the cases that recovered under such conditions, one would find a urethro- or vesicle-vaginal fistula, and in fatal cases some post mortem evidences of the severity of the injury.

Another instance which readily occurs to the mind is the use of pessaries. When one considers how many thousands of these instruments have been used during the last fifty years, and that the great majority are so constructed, that one "point d'appui" is the anterior vaginal wall in most cases directly over the urethra, it is evident that all the conditions for direct compression are present.

In spite of the concavity devised especially to protect the urethra, a very great percentage are too large, ill-fitting, or injudiciously applied, and if direct compression within non-injurious limits could produce retention, the literature would be full of such cases; but Dr. Nelson, out of a long and authoritative experience, says, in a personal communication to the writer, that he has never seen an ischuria produced by pessaries except where ulceration and destruction of tissue remained as evidence of the amount of pressure applied.

We learn from those writers who attribute great importance to direct compression by the cervix as an etiological factor, that retroversion also results from the pressure of the enormously distended bladder in retention, so that some condition of the pelvis must be found wherein retention may occur without compression by the cervix.

Kolischer, impressed by the inadequacy of the varied explanations, says that examination by the cystoscope shows the bladder wall to be always edematous and he believes that ischuria is the result of this edema. In the absence of proof that the edema existed *before* the ischuria, we cannot feel that this theory is sufficient, furthermore this theory would require in a majority of cases, a sudden occurrence of the edema to coincide with the sudden onset of the ischuria. This, however, is not plausible unless we can demonstrate angio-neurotic conditions of the bladder wall. It is more reasonable to suppose that the edema is the result rather than the cause of the ischuria.

In ischuria then, we have a phenomenon which occurs under circumstances where the influence of direct pressure is assumed to prevail, and yet in many other cases where the presence of pressure could be far more legitimately assumed, the phenomenon does not occur. Furthermore, we have the phenomenon present in instances where compression of the urethra or neck

of the bladder can be definitely excluded, so that an etiological factor must be assumed which is easily accessible to the intruding force, responsive to its activity, and susceptible to the influence of conditions other than those present in the urethra and neck of the bladder.

There is only one function which can be thus interfered with and produce such results, only one which satisfies all these conditions, and that is to be found in the nerve ganglia which supply motor and sensory filaments to the wall of the bladder.

Reviewing the physiology of the bladder function, one may, according to Starling, divide the process of micturition into eight distinct acts :

1. Accumulation of urine.
2. A slow rise of intravesical pressure (to 15cm. of water).
3. Contraction of the bladder, increasing in force with increasing tension.
4. Afferent impulses ascending from the bladder to the lumbosacral cord.
5. Reflex discharge of impulses by hypogastric and pelvic nerves, causing contraction of the whole bladder wall and rise of intravesical tension (to 20 or 30 cm.) reinforcing the contraction of the abdominal muscles.
6. Resistance at the neck of the bladder is overcome, the urethra is straightened out, and the adhesion of the empty tubal walls to each other is overcome.
7. Emptying of the bladder.
8. Contraction of striated and unstriated muscles around the urethra, which completely empty the tube.

This series of phenomena is inaugurated and executed in response to the stimulation of those branches of the nervous system which are given off from the lumbar portion of the cord, and from the second and third sacral nerves to form the hypogastric plexus and the pelvic plexus (*nervi erigentes* which in turn send filaments, both motor and sensory, to the bladder. The walls of the bladder are supplied with nerve fibers which run into the neck of the organ from the hypogastric plexus. This plexus consists of nerve fibers and small collections of ganglion cells lying in loose connective tissue on both sides of the middle part of the rectum. Some ganglion cells are found along the course of the fibers in the walls of the bladder itself.

The hypogastric plexus receives its fibers from two sources—from the sacral nerves and from the inferior mesenteric ganglion.

The branches from the sacral nerves are usually two, and very rarely three in number, and are derived (in the cat) from the second and third sacral nerves. They are known as the *nervi erigentes* or pelvic nerves, and run straight to the plexus without passing through the sympathetic chain. The fibers from the inferior mesenteric ganglion to the plexus run in the hypogastric nerves—two gray nerve trunks which pass downward on each side of the rectum to take part in the formation of the plexus near the neck of the bladder. The inferior mesenteric ganglion consists of four small ganglia connected by fine fibers lying around the origin of the inferior mesenteric artery. This ganglia receive three nerves from the lumbar sympathetic chain, and send branches down along the inferior mesenteric artery, and two fine branches upwards to the superior mesenteric ganglion and so to the solar plexus. The fibers which reach the inferior mesenteric ganglion from the sympathetic chain are derived from the third, fourth, and fifth lumbar nerve roots. They are connected, as Langley and Anderson have shown, by means of the nicotine method, with cells in the inferior mesenteric ganglion and make no connection with the cells in the ganglia of the lumbar sympathetic chain.

Regarding the functions of these two sets of nerves, nearly all observers agree that they convey motor impulses to the bladder. Stimulation of the sacral nerve roots, or of the *nervi erigentes*, gives rise to strong contraction of the bladder, which is unilateral if the nerves of one side only are stimulated, and generally causes micturition. Section of, or pressure upon these nerves in any part of their course would evidently result in paralysis of the forces which empty the bladder.

To get a more accurate idea of the function of these nerves is difficult, but von Zeissl regards the hypogastric nerves as motor for the circular, and inhibitory for the longitudinal fibers (detrusor urinae) of the bladder, the pelvic nerve or *nervi erigentes* having the opposite effect. Courtade and Guyon also conclude that the pelvic nerve is motor for the longitudinal and the hypogastric nerve for the circular fibers. Most writers agree that the principal expulsive effect on the bladder is derived from the pelvic plexus.

The very evident deduction from this is that any pathological change in the pelvis which produces compression in any part of these motor fibers or their ganglia which supply the bladder will result in a distal paralysis, a failure of the bladder walls to

contract, absence of the appropriate afferent and efferent impulses, and a general accumulation of urine until life is endangered. This is evidently the sequence in cases of retroflexio-version of the pregnant uterus. When the growth of the uterus reaches a point where compression of some of the ganglia or fibers of the pelvic plexus occurs, the retention is suddenly inaugurated. Meanwhile the sensory nerves being comparatively unaffected, the subjective symptoms are greatly intensified as the bladder increases in size until such time as the engorgement produces pressure effects with the paralysis of those nerves also. In some instances the sensory ganglia are also compressed and the evolution of the case proceeds painlessly as in the instance reported by Keitler. It must also be admitted that the abolition of the sensory impulses by compression of the ganglia may also result in retention owing to the absence of the primary impulse in promoting motor activity, this is noticed especially in some forms of pelvic inflammation. The more nearly the inflammation of connective tissues approaches the bladder—the more the peritoneum is involved—so much the more definitely will the urinary function be affected.

Given an ischuria in the absence of mechanical conditions and an irritation of the pelvic peritoneum must be suspected, an irritation which is communicated in turn to the pelvic plexus of nerves. One writer reports that in all cases of pelvo-peritonitis (suppurative) hematocele and ruptured tubal pregnancy, temporary ischuria was a constant symptom and also in one case where the pus broke through into the intestine.

Is it possible to justify our hypothesis in the presence of all or even a majority of the pelvic conditions in which retention occurs?

In point of time we find that some variation exists according to the form and degree of the pelvic anomaly. Thus in retroflexion of the pregnant uterus, the uterus being dislocated and fixed before conception occurs, the retention begins about the third or fourth month. In retroversion of the second degree, from the sixth to the twelfth week, which may be prolonged to the sixteenth week in cases approximating the third, while in the fourth degree retention does not appear until near the middle of pregnancy.

The delay in the appearance of ischuria in the fourth degree cases sustains the proposition advanced. In cases of the first degree no retention occurs because no pressure is exercised upon

the ganglia which control the bladder and the uterus undergoes a normal evolution.

The common factor in all other cases is the time required in development for the uterus to exercise pressure on the pelvic plexus, being earlier in retroversion than in retroflexion.

In retroversion of the fourth degree there can be no pressure exerted on the plexus or on the ganglia until the fundus in the excavation becomes large enough antero-posteriorly to produce the compression. The vertical growth is entirely unaffected, there is no restraint in abdominal evolution and hence no pressure upon the nerves.

In some cases the unusual tension on the pelvic connective tissue caused by the growth of the displaced organ produces the compression. One finds an exact regularity in the appearance of the symptoms of every case of retroflexion, and a variation in the time of appearance of the retention in every case of retroversion according to the degree of the anomaly.

Not only the form but also the varying size and position of the uterus bear a close relation to the ischuria.

The body of the uterus retroverted to the second and third degree and growing against the promontory or sacrum fills the sagittal diameter of the small pelvis earlier than in retroflexions, hence the pelvic plexus is compressed earlier. The great probability that compression of the nerves occurs near their sacral origin must also be considered. In the higher degree of retroversion the uterus develops in the long axis of the small pelvis and only reaches the nerves about the fifth month. Hence the cervix does not press against the urethra but against the lower part of the bladder, as the introduction of the catheter repeatedly shows.

In the matter of pelvic masses and inflammatory residues the same principles are involved; as soon as the mass attains a size or position where it compresses the nerves in any part of their course, either at the sacral exit, or near the vesical insertion, urinary retention results. Thus in the case reported by Herrgott an obstinate constipation was the cause of retention. Smithson reports a case of urinary retention in a girl of sixteen years due to the retention of the menses by a tough imperforate hymen, the bladder reaching the umbilicus before being relieved. Mall gives a case of retention in a child two and a half years old, due to a large pelvic abscess which later discharged through the vagina.

In all these cases the gradual increase in size did not result in

ischuria until it became possible suddenly for the pelvic nerve or some of its ganglia to be compressed and at that time the retention was determined. The large cystic and fibroid growths of the genitalia rarely cause ischuria unless incarcerated, for if they are free to grow upward they raise the mass above the pelvic ganglia away from the danger of compression.

Cases of ischuria do however occur in which apparently the theory may not be explanatory: In Vahle's case there was incarceration of the tumor with sufficient pressure on the bladder to cause necrosis of the same, but here it is highly probable that the tumor which filled the sacral cavity produced the ischuria more from pressure on the nerve trunks than from direct pressure on the bladder. The post mortem showed the urethra to be entirely uncompresssed.

In prostatic retention in the early forms, interference with the nerve supply is a possible cause and may result either from the pressure or the inflammatory engorgement; later in the disease direct occlusion of the lumen by the glandular hypertrophy, together with the inflammatory thickening of the mucous membrane may be given a definite place. The etiological importance of artero-sclerosis in these cases is greatly overestimated. In the first place it is not constantly found post mortem even in the vicinity of the prostate, and even in life it is not uncommon to find enlarged prostates without arterio-sclerosis in other and more accessible parts of the body.

After the removal of large ovarian tumors or fibroids retention is reported which is attributed by Olshausen to the kinking of the unduly elongated urethra.

This explanation may hold good in extremely rare instances but the condition is very closely allied to post partum ischuria and should be similarly explained on the ground of diminished intra-abdominal tension due to the removal of the pre-existent growths together with the weakness of the abdominal muscles in consequence of the long over-distention whereby they are unable to assist in raising the intra-abdominal pressure.

Similar conditions are occasionally found after puncture for ascites. In post partum and laparotomy cases it must be remembered that the dorsal decubitus is unfavorable per se for the proper emptying of the bladder.

Shatz' experiments showed that in the horizontal position, the pressure on the bladder equaled 3 to 8 cm. which could be increased by the action of the abdominal muscles to 20 or 30 cm.

this being about one-half the pressure that could be exerted in the sitting posture, and one-quarter that of a standing position.

It cannot be denied however that some cases of retention post partum are due to crushing injuries about the urethra and neck of the bladder and long continued direct compression of the urethra between the hard fetal head and the symphysis where we also find fistula as a result of the traumatism.

An interesting symptom associated with retention and frequently present is the ischuria paradoxa. The dribbling urine, in these cases being the result of an insufficiency of the bladder contraction to expel the contents, the same act draws open the fibers at the junction of the bladder and urethra, the so-called sphincter and allows the urine to pass out, just as the contraction of the longitudinal fibers of the uterus makes traction upon the cervix during labor and greatly assists the dilation. Hence it happens that when the bladder becomes distended to the limit of its elasticity the next part to give before rupture of the fibers takes place will be at the neck where every possibility of obtaining more room is utilized and a slight relaxation of the fibers is obtained through which the urine escapes.

If the theory as formulated is correct it follows almost as a corollary that the stimulation of the sensory fibres by pressure or congestion will cause an undue irritability of the bladder function and where excessive result in paralysis. This suggests the class of cases where in place of atony or paralysis, or before these occur, an excessive irritation is present, the so-called "irritable bladder," by which is meant the frequent and more or less painful micturition without chemical changes in the urine or gross pathological conditions of the bladder.

As pelvic diagnosis has become more exact, less is heard about this condition, and its origin is traced to other pathological states in the pelvis. There are found, for instance, dislocations of uterus, tumors of pelvis or abdomen, hemorrhoids, obstinate constipation, and such diseases of the genitalia as lacerations, metritis, endometritis, inflammatory conditions of the urethra and diseases of the kidneys—in fact any condition, local or systemic, which increases the erethism of the local sensory ganglia of the bladder, will produce this effect. In particular the undue stimulation of the hypogastric plexus or its fibres by pathological conditions, as in a case reported by Pratt of abscess of the kidney, wherein the irritation was due to stimulation of the lumbar plexus of the hypogastric plexus.

This does not exclude cases of central origin of an organic or functional character. In this connection it may be added that the irritation of the bladder in early pregnancy is not due to the traction on the utero-vesical connection because this tissue softened by pregnancy yields and accommodates itself to the changed conditions. Neither is it due to the weight of the anteflexed uterus because this organ has the same specific gravity as the intestines and under normal condition cannot compress the bladder to an irritable degree, but it is due to the general erethism and congestion of the pelvis under stimulation of pregnancy and the consequent irritation of the sensory fibers and ganglia of the hypogastric and pelvic nerves.

To summarize it may be said that:

1. Retention of urine in retroflexio-version is not due to direct compression of the urethra, or neck of the bladder whereby the lumen is mechanically closed.

2. It must be regarded as a form of "pressure paralysis" due to interference with the nerves supplying the bladder in some part of their course.

3. Compression of the principal motor nerve (pelvic nerve) is the most common source of retention. The part most subject to pressure is the pelvic ganglion lying near the great cervical ganglion of the uterus, although the nerve may be affected in any part of its course, either near its distribution to the bladder, or close to the sacral exit of the component fibres.

4. Compression of the sensory nerves, either in the course of the nerve, or peripherally (in the bladder) may also *rarely* produce retention.

5. Both afferent and efferent filaments may be affected simultaneously in a given case of retention, but the order is usually consecutive.

6. Pathological conditions of the pelvis and abdomen which irritate the sensory fibres of the bladder produce the so-called "irritable bladder."

7. Retention of urine post partum and after laparotomy for tumors is due to diminished intra-abdominal pressure, weakness of the abdominal muscles from over distention and the dorsal decubitus.

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SOME SUGGESTIONS THAT SHOULD BE GIVEN THE YOUNG
 PRIMIPARA BEFORE AND AFTER PARTURITION.¹

BY
 GEORGE WYTHE COOK, M.D.,
 Washington, D. C.

"The bearing and the training of a child
 Is woman's wisdom."

PERHAPS some of you will recognize these lines as the quotation with which I closed my last Presidential Address, and possibly you may remember that my subject then was an urgent entreaty that a sufficient opportunity be given our girls for their proper development into womanhood; so that they might become cultured, sweet and lovely mothers. It follows as a very natural sequence that I should now say something as to how woman may acquire the necessary wisdom for the bearing and the rearing of her child. I therefore venture to offer some suggestions that should be given the young primipara before and after parturition. The young married woman is lamentably ignorant of many things that it is desirable she should know, and she is permitted to begin a voyage upon an unknown sea without chart or compass, and she must, with fear and trembling, find her way as best she can. This is immediately, no doubt, due to dereliction of duty on the part of the mother, but beyond that, is not the phy-

¹The President's Address—Read before the Washington Obstetrical and Gynecological Society.

sician primarily the delinquent in that he failed to enjoin upon the mother the importance of communicating certain information to her daughter?

This interesting, untutored young woman, guided almost wholly by animal instinct, after a more or less prolonged voyage upon the sea of matrimony, presently discovers that she is with child. Now that she is in this interesting condition, if she has not already consulted her physician, she will in all probability soon have to do so, on account of the distressing morning sickness which is so frequently present. This is his opportunity to impress upon the expectant mother the importance of the observation of the dictates of a reasonable hygiene during the period of her pregnancy. Too frequently the physician gives but little attention to the pregnant woman who is ultimately to come under his care in her time of travail, unless it be for some pathological condition that demands his skill. It is to avoid pathological conditions that a rational hygiene is to be insisted upon.

The suggestions that should be given the gravid woman for her observance before parturition may be briefly outlined under the following heads: Care of the alimentary tract, clothing, bathing, air, exercise, care of breasts and mental condition.

Ordinarily, during the early months of pregnancy, the appetite is poor and capricious because of nausea and morning sickness, but after the cessation of these, the appetite is much increased and the woman is disposed to consume large quantities of food. It is allowable that she should have a generous supply of good, wholesome food now, because she has two organisms to supply, but it is important that excessive eating should not be indulged in, as hyperalimentation may affect the kidneys injuriously and the fetus may be over developed and its delivery thus rendered more painful and perilous. It is highly important that the intestinal canal should be evacuated daily. This may be secured by the judicious use of such alimentary substances as oat-meal, brown bread, ripe fruits and vegetable oils, and a systematic effort at defecation, at a fixed time each day.

The clothing should be such as will protect the body and limbs from chilling, and should be sufficiently loose so as not to constrict the body anywhere. Hence, tight lacing must be avoided as it would interfere with the development of the uterus and breasts, and circular constricting garters should not be worn as they would prevent the return of blood from the lower extremities. The clothing should be suspended from the shoulders.

Bathing, with tepid water, should be practiced daily, in order to maintain the functional activity of the skin. Sea bathing should be avoided.

While it is indispensable to the well-being of herself and the fetus that the pregnant woman should be much in the open air, and take a reasonable amount of light exercise, it is important that she shall not over-fatigue herself. She should avoid long standing on her feet, and long railroad journeys are to be interdicted. A sea voyage is not permissible, as excessive sea sickness might prove disastrous. She should avoid exposure to draughts of air. The very large majority of women advanced in pregnancy are averse to appearing much in the open, yet I have known some who were not deterred from going abroad for the necessary air and exercise. These latter are to be commended and their example emulated. She will require more sleep than in the non-gravid state, and she should be encouraged to take some rest in a recumbent posture during each day. The only advice that can be given in regard to sexual intercourse during gestation, is to counsel moderation. It is important that the young expectant mother should give careful attention to her breasts, for unless the mammary glands are in good condition for the performance of their function the child will be deprived of its proper aliment and the mother may suffer much pain. The breasts must be free from pressure and protected from cold. The nipples must be kept clean and free from the crusts that are incident to the oozing that occurs during the latter part of pregnancy, by washing with boiled water and the occasional use of some mild soap. They must be wiped dry and then protected with some absorbent cotton, or sterilized gauze.

The emotional sensibilities of the pregnant woman are often much exaggerated and sometimes there is a tendency to despondency; these conditions should be dispelled by encouraging and reassuring suggestions. She may be assured that her mental impressions will have no influence in producing deformity in her child, and that if she will observe reasonable hygienic regulation she may expect a healthy and well developed infant. Hence, her environment should secure quietness, cheerfulness and freedom from excitement.

This interesting and untutored young mother, having successfully passed her puerperium, has yet a perilous course before her and unless she is given judicious and *positive* instructions as to her bearings and the management of her babe, she is in danger of

being stranded upon the shoals of ignorance and uncertainty. It is to be hoped she has had a sensible and prudent monthly nurse; one free from meddlesomeness and not prone to "sugar teats" and soothing syrups. If so, the prospects for the well-being of the child and the comfort of the mother are more promising. Nursing should be a most blissful duty to the mother, but unfortunately there is a strong tendency these days, a most deplorable one, with many mothers to bring up their children otherwise than at the breast; so that the importance of nursing the infant cannot be *too strongly urged*. It *must* be insisted upon. The mother *must* be made to understand how essential it is to the successful rearing of her child, and that it is like robbery to deprive it of its natural and rightful food, and that the greatest infant mortality occurs among those children that have been thus robbed. If the mother and child have been started aright there should be no great difficulty as to their successful progress. The young mother should have explicit and positive directions as to how frequently the child should be applied to the breast and not leave it to be done in an irregular and haphazard sort of way. *Definite* directions should be given her that the young infant should be placed to the breast at intervals of two, or at most, three hours during the day time, and at night, less frequently, at about six hours' interval. It may be explained to her that this longer interval at night gives her an opportunity for necessary sleep, and the child is taught good habits from the beginning. That by a disregard of these habits as to regularity in nursing, the efficiency of the mammary gland is impaired, and there is a deficient milk supply, much discomfort may be stored up for herself and that disordered digestion awaits the child. She should be warned that while regular and frequent applications of the child to the breast are necessary for a good flow of milk and the child's proper nourishment, it is a most reprehensible habit to nurse the child whenever it cries or seems the least fretful. It would be better to examine into the cause of the child's crying. It might be that it was cold, or that some of its clothing was uncomfortable, or a pin might be sticking it. With the correction of these conditions the child will most likely become quiet. And further it is a most pernicious procedure to lie with the child on the arm with the nipple in its mouth all night long, because such habits will make bad babies, destroy the mother's rest and exhaust her strength.

The young mother should be taught that her baby should be

properly and comfortably clothed—that it must be kept much in the open air, but that it is not out for exhibition, nor is it to be handled and caressed by every one that comes along, but that its function is to eat and sleep and grow. That the child does grow must be carefully observed, and if there is any doubt about its gaining in weight, she must have a pair of scales and weigh it from time to time. And if there is any loss, or no progress she should consult her physician about it.

It is important to counsel the young nursing mother that her own diet should be generous and wholesome, rejecting such things as her experience has taught disagree with her. And that by keeping her mind and body healthfully active and applying the child to the breast at proper intervals, there will be opened an unfailing fountain of nutrition that will conduce to the health of both herself and child.

This interesting young woman is being educated in the hard school of experience; her various friends have had much and varied advice to give her, but as all mothers do not entirely agree as to the best method of rearing a child, she, in all probability, has been much vexed by many conflicting suggestions. She has watched with maternal pride and interest the development of her little cherub, and she rejoices in its shapely body and its well rounded limbs, and its expanding intelligence. But it is approaching that epoch of its existence so much dreaded by all mothers—the period of dentition. What can be said now to tranquilize her perturbed spirit? You all well know that the eruption of the temporary teeth is only the *visible* manifestation of what has been going on since the sixth week of fetal life, and that the completion of dentition will not occur until about the twenty-first year of age, and that if it were a causative factor in the production of disease it should be operative during the entire time. You can assure her that the striking phenomenon of the hard bony teeth emerging in definite order from the softer tissues of the gums and ranging themselves uniformly in the jaws, does not presage any danger to her child, but is a necessary and inevitable process, and is not in itself, a painful, or dangerous occurrence. She is no doubt strongly imbued with the notion that the child must suffer at this time and be subject to many diseases because of the coming of the teeth, for has not the idea been instilled into her mind by her mother and her nurse, and, may be, too, by her physician? She should be cautioned that if she will be very careful and see that no improper thing

is put into the child's mouth, she need not pay any attention to the teeth, for nature's processes will bring them out all right. She should be warned that while it may seem very cunning and captivating to have the child sit at the table and have "just a taste" of the various things the others are eating, it is an exceedingly hazardous practice and infinitely more dangerous to the child than is the "cutting of its teeth." The diseases that do occur during the period of dentition are not due to the teeth, but to errors in diet and such other causes as operate irrespective of them. By all means it should be enforced upon her not to rub the gums with a thimble or any other rough surface.

By the observance of these suggestions the young mother will be spared much anxiety and suffering, her cares will be lightened and her children will flourish and "arise up, and call her blessed."

These thoughts are some that I have culled in a fragmentary way, from some of the papers that I have had the honor to read, at different times, before this Society; and I have thought this a fitting opportunity to present them again thus briefly. They all inculcate an observance of physiological law as the best means of preventing disease, and prevention is superior to cure.

In relinquishing the office with which your partiality has twice honored me, I beg to tender to you, members of the Society, my sincere thanks for your confidence and the great consideration you have shown me. I shall always carry with me a pleasing recollection of this evidence of your good will. I hope for the continued success and usefulness of the Society and wish you, one and all, long life and prosperity.

SHALL A PSEUDO-HERMAPHRODITE BE ALLOWED TO DECIDE TO WHICH SEX HE OR SHE SHALL BELONG?

BY

FRED. J. TAUSSIG, M.D.,
St. Louis.

THE above question arose in the writer's mind on reading in the December number of this journal Dr. J. R. Goffe's interesting account of a case of pseudo-hermaphroditism in which at the patient's request he performed a plastic operation. Although he describes the case as one in which the female characteristics predominated, he apparently wished to give the patient the choice of her sex, for he "asked if she preferred to be made like a man or woman," whereupon "she said decidedly 'a woman.'" Dr. Goffe then proceeded to amputate what presumably was the hypertrophied clitoris and to enlarge by an ingenious plastic the opening of the vagina.

In reviewing the various points in this case that could have helped to establish the sex, none can be found that gives positive evidence one way or the other. Although the supposed girl was twenty years old, there had been no menstruation. Neither is there any mention of an ejaculation of semen. The sexual glands being in the abdomen, their exact palpation was impossible. Had they lain in the scrotal or labial sack the presence of epididymis and cord in the case of the male and their absence in the female might have given almost conclusive evidence one way or the other.

All the other sexual characteristics described in the case, whether of the external or internal genitalia, or the so-called secondary sexual traits (hair, breasts, etc.), or the psycho-sexual feelings might appear in either sex. Doubt must arise in the reader's mind, therefore, whether Dr. Goffe did not perhaps operate upon a man instead of a woman. In fact it is not clear on what grounds he thinks that "the female characteristics predominate." Neugebauer has shown how much the sexual feeling of an individual depends upon the conditions under which such a one has been raised. That the patient in this case had the sexual desires of a woman must, therefore, be looked upon

more as a result of her education, of suggestion and imitation than as in any way conclusive evidence of her true sex. The other points supporting the idea that she was a woman was the feminine voice, the short urethra, the cleft in the genital folds opening into a short vagina and the fact that the sexual glands were retained in the abdomen. The male characteristics of the individual were the rudimentary development of the breasts, marked hairy development over the face, body and extremities, all in typically masculine distribution; "occasional male tendency" of voice; an organ resembling a penis 3 inches long and $3\frac{1}{2}$ inches in circumference, erectile on the slightest touch; a "narrow strip of mucous membrane along the free border of the frenum, as in cases of hypospadias," and the absence of any palpable uterus.

That the question of sex in this case was very much in doubt must be clear from this review of the evidence, and there would even be a certain justification to my mind for making the provisional diagnosis of male peno-scrotal hypospadias with undescended testicles, since Neugebauer's statistics have shown this form of pseudo-hermaphroditism to be far more frequent than corresponding conditions in the female.

Another point of importance is the age of the patient—only twenty years. Supposing, for a moment, that the individual be a man, it would be not at all impossible that in the next ten years there might still occur the first ejaculation of sperma or the long delayed descent of the testicles. In either event the sex of the patient would be established. What must be the feelings of such a patient when he thus discovers, but too late, that he has asked for an operation which has to a certain extent unsexed him!

We must, therefore, have something more positive than the patient's wishes to determine our course in regard to these plastic operations. After all, such wishes are almost entirely governed by the sexual feelings, and these in turn are largely the result of external conditions, such as education and surroundings. Moreover, it not so infrequently happens that the sexual feelings of a hermaphrodite change from that of man to woman or vice versa, once, nay, even several times in the patient's life. Besides being frequently at variance with the actual sex of the individual, therefore, we are here dealing with a very changeable quality.

In the absence of *true* hermaphroditism, we must *à priori* suppose every hermaphrodite to belong either to one sex or the

other. The question of sex has thus been determined at birth and it certainly seems a dangerous proceeding, even at the patient's request to perform an operation that may later prove to have been injurious before we have done all in our power to determine what that sex really is.

Records show that mistakes of this kind have been made frequently. In 58 operations for rupture on hermaphrodites, an error of sex was established 42 times. Similarly in 28 laparotomies on such individuals, it was found not less than 15 times that a mistaken diagnosis of sex had been made. We further know the case of a girl, whose hypertrophic clitoris was removed by Berendes, and who, upon a later abdominal operation by Landau, proved in reality to have been a man. It is on this account that Neugebauer has recommended performing a previous diagnostic laparotomy. He discusses the point at some length in a recent address delivered before the Warsaw Medical Society on "What Value Has the Knowledge of Pseudo-hermaphroditism for the Practitioner?" Here he relates the case of a servant girl whom he took to be a male hermaphrodite, who came to him to have a hypertrophic clitoris removed. He first performed a laparotomy, found the sexual glands to be ovaries, and thereupon amputated the organ according to the girl's wish. Five such diagnostic laparotomies have already been performed on hermaphrodites.

To sum up, therefore, we must in these cases do one of two things: on the one hand, either wait up to the twenty-fifth or thirtieth year for the appearance of some positive sign, such as a menstrual flow, the ejaculation of sperma, or the descent into the scrotal sack where palpable, of testicle, epididymis and cord, or, on the other hand, to perform a diagnostic laparotomy. After the sex has thus been determined in one or the other way, and not before, the surgeon can, with safety, proceed to whatever external plastic, conforming to these findings, the patient may desire to have performed.

Note: Since the completion of this article, Dr. Neugebauer (Zentralblatt fuer Gynaekologie, Jan. 16, 1904) has published six further cases of pseudo-hermaphroditism. They serve to fortify even more his argument that mistakes in diagnosis of sex will continue to be made until every precaution is taken to wait for the appearance of positive signs (menstruation, ejaculation), or until in every doubtful case a diagnostic laparotomy is performed. Of his six new cases five are persons with male hypospadias and

undescended testicles. Twice a diagnostic laparotomy was performed. On one occasion, testicles, on the other ovaries, were found. The photographs taken of the external genitals in Case 4 (male hypospadias) are strikingly like those in Goffe's case. Those who read this new publication will certainly be impressed by the fact that the only way to determine at once the sex of such individuals is *to open the abdomen and see*. A further justification for this operation is to be found in the fact that such a large percentage of these cases are associated with malignant tumors. Thus Krönig removed the testicles in one case on account of the danger of sarcomatous degeneration. F. J. T.

A CONTRIBUTION TO THE FUNCTION OF THE CORPUS LUTEUM.¹

BY

EMIL RIES, M.D.,

Professor of Gynecology, Post-Graduate Medical School, Chicago; President of the Chicago Gynecological Society.

OCTOBER 25, 1903, I had to operate on an unmarried woman of eighteen years, who had had two slight attacks of appendicitis, and was in the beginning of her third attack. The menstrual history was as follows: Menstruated first at thirteen years, then always regular, every four weeks, lasting four to five days, rather free, but without clots and without pain. No leucorrhea. Last menstruation September 26th. The general condition of the patient was excellent.

When I laid bare the peritoneum through an incision over the appendix, the peritoneum showed the peculiar blue or green color, with which the operations for intra-abdominal hemorrhage have made us familiar. On opening the peritoneum a considerable quantity of bright liquid blood appeared, which was sponged out sufficiently to permit a clear view of the appendix. Immediately it became evident that the appendix was not the cause of the hemorrhage, as it showed no perforation and no gangrene. There were adhesions of the appendix, it was club-shaped at the end and contained a small concretion. The vessels of the peritoneal coat were injected. The appendix was rapidly

¹Read before the Chicago Gynecological Society, Nov. 20, 1903.

removed after my method. (*New York Medical Journal*. July 1903.) As the source of the hemorrhage was not found in the appendix I considered two possibilities: first, tubal pregnancy; secondly, hemorrhage from a ruptured follicle, the latter because the time of the operation was so close to that of the expected menstruation.

The right appendages were pulled up and found perfectly normal. No blood could be milked from the tube and the ovary contained neither mature follicle nor corpus luteum. The incision was therefore closed and a second small incision made in the median line. When the left appendages were pulled into view the ovary was found the size of a silver dollar, twice as large as the right ovary, but flat. On its convex border was seen a freely oozing corpus luteum. A small clot escaped from it as the ovary was pulled up. The tube contained no blood. A small wedge-shaped excision was made, comprising the bleeding opening, the ovary being held by two fingers at its base. When the fingers were removed the hemorrhage was found to continue and therefore the corpus luteum was peeled out with a blunt instrument, care being taken to keep outside the yellow tissue. Immediately the hemorrhage stopped. The thin edges of the ovarian tissue were united with a running suture of fine catgut. The incision in the median line was then closed. The patient made an uninterrupted recovery, sat up on the second day after the operation, walked on the third, left the hospital a week after the operation. She has been seen twice since and is in perfect health. The incisions have healed by primary union and the symptoms of the appendicitis have disappeared entirely.

The hemorrhage from the corpus luteum, though interesting in itself on account of its quantity and the bearing it may have on the theory of pelvic hematocele not caused by tubal pregnancy, is not the reason why I report the case here. When I saw the bleeding corpus luteum I remembered a recent paper by Fraenkel on the function of the corpus luteum (*Archiv f. Gynäk.* Vol. 68, 1903), in which the author elaborates the theory that menstruation is caused by the secretory activity of the corpus luteum. In this paper Fraenkel reports nine cases, which prove more or less clearly, that after destruction of the corpus luteum by the Paquelin cautery, the menstruation due after the operation does not take place. The case described above seemed to be favorable for a test of this theory. The menstruation of my patient was due on October 24th. Curettage, which frequently retards men-

struation or causes one to be skipped altogether, had not been performed in this case. We therefore watched the patient with considerable interest as to the possible influence of this extirpation of the corpus luteum. Forty-eight hours after the operation the patient began to flow, that is three days too late, and the menstruation lasted the usual number of days (four), and was of the usual amount.

The extirpation of the corpus luteum had failed to prevent or check the expected menstruation. It cannot be said to have retarded it either, as the menstruation had been due one day before the operation.

On looking over Fraenkel's nine cases I find that he also had the experience, that the extirpation of the corpus luteum performed near the term of the expected menstruation does not prevent it with absolute certainty. But if Fraenkel prevented the formation of a corpus luteum altogether by destruction of the mature follicle, the menstruation was skipped in every one of his three cases of this class. It is entirely probable that the extirpation of the corpus luteum did not prevent menstruation in my case, because the corpus luteum had produced enough of the hypothetical internal secretion to start the menstruation even after the corpus luteum itself was removed.

It is very desirable to make further observations on this extremely important question of the connection between corpus luteum and the functions of the uterus, and I report this case as a contribution to the study of these relations.

FURTHER REMARKS UPON GONORRHEA: ITS COMPLICATIONS AND OUR RESPONSIBILITY IN AUTHORIZING MATRIMONY.

BY

JOSEPH TABER JOHNSON,
Washington, D. C.

ON the 30th of January, 1901, I read a paper before the Medical Society of the District of Columbia, upon the "Complications of Gonorrhea in Women and their Prophylactic Treatment," in which I discussed the subject under the heads:

"The importance of these complications—Their frequency—Their nature and variety—The so-called 'latent Gonorrhea' from an obstetrical and infantile standpoint—The prophylactic Treatment."

The importance of the subject was shown from indisputable evidence that many women lose their lives, annually from these complications, and that thousands lose their health or become sterile from the same cause.

It was pointed out, and with some emphasis, that its disastrous effects were not confined to the debased and outlawed classes, but that it too frequently wrecks a home and destroys an innocent and valuable life in the highest walks of society.

Instances were given of the infection of youthful and trusting brides by their supposedly cured husbands.

The opportunities for the infection of men are startling if not appalling—and the sad fact forces itself upon our frequent unwilling attention, that they, through carelessness or ignorance in turn infect their own wives, or other women with whom they have illicit relations.

From the best statistics I have been able to obtain, there are 300,000 women in this country leading lives of prostitution; and the estimate is made by health officers and the superintendents of police in 30 large cities, who make reports on this subject, that for every woman who regularly resides in a house of fame, there is at least one, if not more, just as bad, who never

* Read before the Washington Obstetrical and Gynecological Society

or rarely becomes known to the police. This will give half a million, at the lowest estimate, of candidates for this disease in our country alone. Take the world at large, as we do in estimating the probabilities in other diseases, such as cholera or the plague, and the women in the world who have this disease to-day, or are liable to have it to-morrow or next week, may fairly be reckoned by millions. I learn that the average length of life of these women is only five years, from the time they begin a life of prostitution, and that 40,000 of them die annually. While some die from the effects of dissipation, and the ordinary diseases incident to humanity, it would seem fair to assume that from 30 to 40 per cent. die annually, from the effects of gonorrhea. I think Bland Sutton, of London, is correct, when he states that gonorrhea is the chief cause of the sterility of the prostitute class. A gonorrheal salpingitis, whether it goes on to suppuration and the formation of pus tubes and ovarian abscesses or not, frequently destroys the epithelial lining of the tube and so cripples the ovary as to render conception next to impossible. Sterility is, then, a very common, if not a universal legacy inherited by the female victims of this disease.

"The chief danger of gonorrhea in the female is the infection of the uterus and uterine appendages." "Gonorrhea is the chief source of salpingitis and pelvic peritonitis." Among other complications may be mentioned: inflammation and suppuration of the vulvo-vaginal glands; urethritis; cystitis; ureteritis; nephritis; and pyonephrosis; proctitis; endo-cervicitis; salpingitis; ovaritis; tubo-ovarian abscesses; pelvic-peritonitis and general peritonitis; paratubal, ovarian and uterine inflammation; puerperal complications and very destructive infantile ophthalmia.

It may also attack serous membranes and fibrous tissue, synovial sacs, bursa, tendon sheaths, pleura and the pericardium. Familiar illustrations are gonorrheal rheumatism and ulcerative endocarditis. The peculiar germ of gonorrhea may reach near or distant parts of the body through the lymph and blood streams, and may penetrate the tissues and produce suppuration and cause glandular adenitis, especially in the inguinal region.

These are very grave charges to bring against any one disease, but one has only to consult recent literature to become convinced that they are only too true. I presume that it would be within the bounds of truth to state that there is hardly a single disease which we have to treat to-day, which is capable of pro-

ducing more suffering and sorrow, both among the guilty and the innocent, than gonorrhea.

The power of the gonococcus to infect another after an indefinite period, from the acute attacks, has been denied by some, but instances are not infrequent where the most disastrous results have followed the marriage of supposedly cured husbands months after all pains and discharge had ceased. One of the chief, and to my mind, most important points for discussion, in this paper, is when, if ever, may we give our professional sanction to the marriage of a man positively known to have had this disease, and our professional assurance that the trusting and innocent wife will be absolutely free from danger of infection?

It is probably within the professional knowledge of every doctor in this room, that wives have been infected with this disease by ignorant or careless husbands. In some instances these men have been assured by their physicians that they were cured beyond the danger of transmitting the disease to others. This assurance has been construed into a professional permit and sanction of matrimony. The physician may not have thought, when he gave this opinion, that these gonococci were lying back behind a deep and only partial stricture, ready to spring into deadly activity upon the occurrence of venereal excitement or sexual excess. The doctor himself may not have known what we have the most abundant authority for stating now, namely, that (Dudley's "Gynecology," 2d edition, p. 155), "the chief power of the gonococcus for harm lies in the lasting vitality of the germ after apparent cure. The gonococcus may remain inactive in the mucus crypts, liable at any time, even while quiescent in the individual, to be communicated to another." Hence many an innocent and previously healthy woman, shortly after marriage to a man who supposed himself to have been cured of gonorrhea years before, may, by contact with the attenuated virus, get a destructive gonorrheal infection of her genito-urinary organs.

Wertheim (quoted in Dudley's "Gynecology," p. 155) reports that human serum agar is the best culture ground for gonococcus. In this culture, at 40 to 43 degrees C., they retain their full reproductive capacity. A direct experiment from pure culture from a gleet discharge of two years' standing gave the following interesting results: (1) Attempted reinfection of the original urethra with this culture was always a failure; (2) the culture when transplanted to a coccus-free urethra produced typical acute gonorrhea; (3) infection from this, back again to the original

urethra, gave a fresh gonorrhea, which, after a typical course of five or six weeks, again subsided into chronic gleet. Thus by passing the gonococci through another individual—that is, through a new culture ground—they become again virulent to the urethra which was invulnerable to them before.

This explains the fact that an apparently healthy subject of chronic or latent gonorrhea, may infect his hitherto uninfected wife, and become infected from her. That is, the gonococci passing through the new culture ground of the wife, again become virulent for the husband. We now understand why the gonococcus, even after years of apparent cure, may regain its full virulence.

I will not enter into the discussion of the damage done in obstetrical cases by gonorrhea, further than to draw your attention to the fact that gonorrheal infection of puerperal women among the lower classes is according to Hirst, very common; page 631—Hirst Obstetrics. But I do wish to impress upon you the sad fact that out of the 58,000 blind persons which the last census discovered in our country—15,000 innocent children are declared by our ophthalmological writers to have lost their sight from gonorrheal infection.

On November 11th, 1902, I read a paper upon "The Curse of Gonorrhea," before the Southern Surgical and Gynecological Society at its meeting in Cincinnati, in which I said, in part, that preventive medicine will probably rank the highest among the medical achievements of the twentieth century. The wonderful results obtained by the improved technique and practice of modern antiseptic surgical methods, especially in the abdomen, mark the past century as one of the most remarkable in the entire history of medicine.

It is for the prevention of serious infections by the gonococcus of Neisser that I appeal to you, and through you to the great profession of which we all are members.

No more important question, I fancy, presents itself for consideration in the entire realm of practical or preventive medicine than this—When can we professionally sanction the marriage of a man known to have had gonorrhea? Can we say, at the present time, when a man is cured?

Drs. Keermecker and Verhoogen, in their book published last year on "Chronic Urethritis of Gonococcic Origin," intimate that we cannot. They say that "the gonococcus may remain in the canal during the course of chronic urethritis; that is to say, dur-

ing an indefinite time. Its virulence may then become attenuated, and only show itself by the invading character of the lesions and the obstinancy of the disease. It may also begin again, after a period, and thus give to the affection the acute or contagious character which it had seemed to have lost. It is impossible to determine at what moment, the gonococcus having disappeared, the disease ceases to be transmissible."

And again, "When these facts will become better known to the profession, auto-reinfection by gonococci, permitted to become latent, in the deeper structures, will become a rarer event, and the prognosis of gonorrheal infection in both sexes will be a more hopeful one."

In the chapter on "Chronic Gonorrhea and Marriage," they say: "No doubt there is ample ground for the pessimistic belief of Behrand and his followers, that gonorrhea is practically incurable, especially in the female, and they raise and emphasize the question as to when we may pronounce a gonorrhea cured? Nothing short of educating the masses to the perception of the great social danger which lies in an attack of gonorrhea will mitigate its ravages and save hecatombs of wrecked lives in both sexes—but especially in women."

That this subject is attracting more attention of late is evidenced by the favorable reception of Jullien's monograph upon "Libertinism and Marriage," which has been honored by translation into English and German, and also, by the three annual sessions of an International Congress of Genito-Urinary Specialists.

The point, however, which I wish to lay the greatest emphasis on, is that we should make ourselves much more certain in the future than we have done in the past, that our patients of both sexes are absolutely cured, beyond the danger of a relapse, before we dismiss them from further observation, control and treatment. Our female patients should be so vigorously treated as to prevent, if possible, the extension of the disease beyond the vagina and the external parts. The question of "latent, chronic or residual gonorrhea," and its possible disastrous consequences, should be more constantly in mind when we are treating these cases, and our management should be so radical, thorough and complete, as to prevent the occurrence of pelvic infection and adnexal complications. These cases should be no longer left to the care of drug clerks, medical students, and irresponsible persons to treat. Some hospitals still refuse, I am informed, to admit vene-

real diseases, and some physicians regard it as beneath their dignity to attend them. Patients are compelled, not infrequently, for this reason, and also on account of the high charges of good physicians, to consult unskilled persons and the advertising quacks. One of the consequences of this unwise course, is that they are only half cured, and the patients with this disease are permitted to go about thinking themselves cured, and some of them will undoubtedly contaminate innocent persons. Not a few writers, in the light of advanced modern science, speak of gonorrhea as being a much more serious disease than syphilis, especially in women. The day has gone by when it can be said, as we have all probably heard it said that gonorrhea was less to be dreaded than a bad cold, and that the well-advertised "three-days' cure" would render the care of regular physicians unnecessary, etc. The difficulty of a perfect cure has been recognized and emphasized by the most skilled specialists in this department of medicine. Our consciences, as well as our treatment, need revision in regard to the dismissal of gonorrheal patients as cured, so absolutely and permanently, as to make marriage safe, beyond the possibility of the contamination of the innocent wife. How long after the gonococcus ceases to be found by the microscopist in the urethral secretions or discharges can we safely give our professional sanction to matrimony? This is one of the burning questions of the day, and should be considered with the greatest care and conscientiousness. Dr. Joseph Price says there are more and better reasons for locking up in jail, a man with gonorrhea than there are to incarcerate a common murderer. In one case, there is only one victim, and that victim is dead; in the other, there may be a dozen or more, doomed possibly to suffering and sorrow during the remainder of their miserable lives.

In speaking of the frequency of gonorrhea among reputable women, Dennis' System of Surgery, p. 771, says that "for many reasons this number is extremely difficult to compute. Such cases are probably numerous, and usually arise from infection from husbands who are themselves suffering from a chronic urethritis, the result of an imperfectly cured gonorrhea, of long standing. It is not generally recognized that in cases of chronic urethritis the gonococcus may retain its activity for two or three years."

Kelley adopts (p. 35, "Operative Gynecology,") the statement of E. Wertheim, "that gonorrhea is the most frequent cause of suppuration met with in gynecological practice." Penrose, who takes a most optimistic view of the progress of gonorrhea in

women, says on page 441 of his text-book on diseases of women, "I have no intention of underrating the danger to the woman of coitus with a man who is not entirely cured of a gonorrhea or a gleet. The lives of a great many women have been ruined by marriage with incompletely cured gonorrheal husbands, and very few men in such a condition would contemplate marriage if they were aware of the danger to the woman which results from such an act."

This is the point I have been trying to impress upon my brethren in the profession, in the papers I have written on this subject. The honest men who come to us for an opinion as to whether they can safely marry, are too often assured, upon insufficient evidence, that they *are* cured, and that they can perpetrate matrimony without danger of infecting their wives.

Recent literature upon this subject is full of testimony not only of the consequences of this erroneous advice, but of our inability to pronounce a man cured, until quite a number of years have elapsed, since any objective symptoms have been apparent.

Evidence is not wanting of cases of infection of wives by their husbands, anywhere from one to six years after the total disappearance of all symptoms of this disease.

The latent powers of the gonococcus for revivification under proper stimulation or irritation, are so great and so lasting, that not a few writers express grave doubts as to whether we can ever professionally sanction matrimony, for a man we have treated for gonorrhea, of the posterior urethra—*anterior specific urethritis* in the male, and *vaginitis* in the female, are undoubtedly cured before any of the ascending infections and complications occur. In other words prophylactic treatment has been so successful as to prevent the chronic deep seated infections, which are so difficult to cure by any known methods of treatment.

In the discussion of my paper on the "curse of gonorrhea," in Cincinnati, nearly all the speakers endorse the position taken by the writer. Dr. Hugh Young, of Baltimore, said, among other things: "We have a great and severe problem here to contend with, a great many times we must tell patients who are apparently well, who have no discharge from their urethras, who pass only a few shreds, that they cannot get married, regardless of how much we would like to see them marry the women of their choice. It is a difficult problem, and one that has not been settled."

Dr. Young said he knew a case in Baltimore, who had been treated by an excellent practitioner for three or four years, the

patient put off his marriage for two years more, and finally the doctor, after examining carefully with culture and cover slips before and after irritating injections, and finding no gonococci, told him that he could safely marry. Six weeks after the wedding his wife was brought in with acute tubal disease and peritonitis, requiring laparotomy and salpingectomy.

Dr. Noble, of Philadelphia, after saying that "we all concede the importance of the subject," proceeded to relate two cases which he said were exactly similar to two cases related by Dr. Young. "The two cases of Dr. Young of a violent acute condition arose from so-called latent gonorrhea, and in the two cases I will report, acute gonorrhea was caused from latent gonorrhea.

"These two cases had gonorrhea and were treated by an expert in genito-urinary diseases, both of these men were told they were cured and finally got married. It was a year after the supposed cure before the question of marriage came up, they went back to the physician, who re-examined them carefully, both of them having been told they were perfectly well. Within a month after marriage the wife of one of them had a pus tube, and the other salpingitis and peritonitis. I removed the appendages from both women. I feel at the present time that I cannot tell positively when a man is cured of gonorrhea, and I would not be responsible for telling any man he could get married with absolute safety, if he had *ever* had gonorrhea. There is no way at present to tell so far as the man is concerned, and it is probably equally true of the woman."

"The longer marriage is put off, the less risk there is of conveying gonorrhea." Dr. Noble closes his remarks by these words: "So far as I know at the present time we have no means of positively telling men or women who have had gonorrhea that they are well."

I wish also to draw attention to the fact that latent gonorrhea may exist in both men and women without our being able to demonstrate it microscopically. In women the germ may be too deep in the pelvis to capture, and in men the means used may not succeed in bringing the gonococcus to the surface, and under the microscope. Dr. Young reported such a case in a husband, who nevertheless infected his wife, and Dr. Sherrill, in the discussion above referred to, reported the case of a young lady, seventeen years old, whose family physician had made a diagnosis of gonorrheal salpingitis. Dr. Sherrill's examinations of the secretions of the vagina, showed the absence of gonococci; he

therefore doubted the correctness of the diagnosis. In his operation therefore he opened and drained the tubal abscess through the vagina. The pus upon examination showed gonococci. "This illustrates," he says, "that we may have a violent gonorrheal process, and yet be unable to demonstrate the presence of the germ in the secretions from the urethra or vagina." Of course if we find the germs the diagnosis thereby becomes evident in all cases."

Further, and abundant testimony might be introduced to show the difficulties and importance of the diagnosis, and especially the prognosis, of posterior, chronic specific urethritis, in the male, and of the very serious nature of the complications of gonorrhea in the female, but it hardly seems necessary to do so. The two chief contentions in this brief presentation, of this ancient subject, seems to the writer, to have been established beyond the possibility, as the lawyers say, of successful contradiction.

So impressed am I, however, with the dangers and complications of gonorrhea in women, and also with those liable to arise from the marriage of men with latent gonorrhea, that I cannot close this paper without a brief recapitulation of its main points.

1. The opportunities for acquiring gonorrhea are very numerous, there being, at the least calculation, half a million women in our country alone, from whom it is possible to acquire it some time, and probably many times during their lives.

2. That these opportunities are not neglected is shown by the statements frequently met by the writer during his recent investigation of this subject, that fully ninety per cent. of men do acquire it.

3. The very serious pelvic complications possible to all women, wrecking their health or shattering their lives.

4. The great number of abdominal sections required in the treatment of these complications which necessarily leave the woman seriously mutilated, if not absolutely unsexed.

5. The dangers of puerperal infections.

6. The inexpressibly sad cases of ophthalmia neonatorum, resulting in from ten to fifteen thousand cases of infantile blindness annually.

7. The complications following gonorrheal infection in men.

8. The great difficulty of cure after reaching the chronic or latent stage in the posterior urethra, and

9. Our very great responsibility in advising a man whom we have treated for gonorrhea, that he is so thoroughly cured that he can marry without danger of infecting his wife.

The American Public Health Association considered this subject at its recent meeting in our city, where a paper was read by Professor Ulises Valdes, of the National Medical College of Mexico, upon "Measures to Prevent the Propagation of Venereal Diseases."

So much suffering, and sorrow, result from gonorrhea, that I venture to predict that in the not very distant future, the law will protect the innocent, by requiring, before the issue of a marriage license, that a man shall present a medical certificate, from competent authority, that he cannot infect his wife or offspring, with serious hereditary diseases, including gonorrhea.

STATISTICAL NOTES ON CAUSES OF SALPINGITIS.*

BY

FRANK T. ANDREWS, A.M., M.D.,
Chicago,

Professor of Clinical Gynecology, Northwestern University Medical School; Gynecologist to Mercy Hospital and to Wesley Hospital.

I HAVE gathered a mass of statistics concerning tubal disease, and have selected those which relate to the etiology of salpingitis.

Theoretically, salpingitis may be divided into two groups, simple inflammation and that produced by parasites; but as simple inflammation never occurs except as an incident in some more important condition, it may be passed over in a few words.

A glance at the following list of causes will verify what has been said.

1. Congestion and hyperemia from "taking cold."
2. Pressure or dragging caused by
 - (a) Constipation.
 - (b) Tumors.
 - (c) Displacements.
 - (d) Hernia of the tube.
3. Trauma.
4. Extra-uterine pregnancy.
5. Retained menstrual flow in case of atresia.

*Read before the Chicago Gynecological Society, Nov. 20, 1903.

6. Phosphorus poisoning.
7. Acute infectious diseases.

The parasitic forms of salpingitis are caused by an invasion of the tube by the following micro-organisms:

A. ANIMAL PARASITES.

- a. *Echinococcus*.
- b. *Blastomyces*.
- c. *Oxyuris vermicularis*.
- d. *Ascaris lumbricoides*.

B. VEGETABLE PARASITES.

1. Pus producing bacteria.
 - a. *Gonococcus*.
 - b. *Streptococcus*.
 - c. *Staphylococcus*.
 - d. *Pneumococcus*.
 - e. *Bacillus coli communis*.
 - f. Typhoid bacillus.
 - g. *Bacillus of malignant edema*.
 - h. *Bacillus of Friedländer*.
 - i. Saprophytes (non-pathogenic).
2. Infectious granulomata.
 - a. Tubercle bacillus.
 - b. Virus of syphilis.
 - c. *Actinomyces*.

The occurrence of animal parasites is very rare.

A. ANIMAL PARASITES.

(a.) *Echinococcus*.—Dolérís collected 80 cases of echinococcus disease of the small pelvis, of which one case—his own—was evidently primary in the tubes; in some of the others the cysts were in more or less close relation with the wall of the tube, but in none was this structure involved to any great extent.

The case reported by that investigator and Benoit was in a woman thirty-nine years old. She was married at twenty, and not long afterwards she began to have pains in the abdomen and pelvis, which continued until she was operated upon. These were worse at certain times than at others. As the tumor increased, micturition and defecation became painful. On examination of the abdomen, a large, elastic tumor was found which reached into the epigastrium. Vaginal examination revealed a hard tumor, the uterus immovable and seemingly forming part

of the tumor. Total abdominal hysterectomy was performed. The tumor resembled folds of very distended intestines and weighed 2 kgm.; greatest diameter 32 cm., least 28 cm.; right tube 57 cm. long, left 53 cm. The mass consisted of the two tubes enormously distended, filled with hydatid cysts. Under the microscope the characteristic of the hydatid membrane was made out, but no hooklets were found.

Pasca has recently reported a case of echinococcus cyst of the tube.

(b.) *Blastomyces*.—Bastinelle has reported a case of chronic salpingitis in which blastomyces were found. The investigator was unable to find other causal micro-organism. The tube showed small cell infiltration in mucosa, sub-mucosa and muscularis. There was an atypical proliferation of epithelium, which is interesting because of the similar finding in blastomycetic dermatitis. Blastomyces were found in the lumen of the tube and in the mucosa, both within and outside of the cells. They often occurred in groups.

(c.) *Oxyuris Vermicularis*.—Mano has reported a case in which he found a large cyst of the ovary and two small cysts of the tube in which were the eggs of the oxyuris vermicularis. He thought the organism had reached the tube from the rectum by way of the vagina and uterus.

(d.) *Ascaris Lumbricoides*.—J. A. Koch has reported a case in which the tubes were removed from an abscess in the pouch of Douglas. In the abscess the ascaris was found, which had probably gotten there by way of the fistulæ which opened into the rectum.

Bizzozero has reported the finding of ascaris lumbricoides in a woman of twenty-four years. The parasite had traveled from a perforation of the rectum, into the right tube and had caused an increased redness and secretion of the mucous membrane.

B. VEGETABLE PARASITES.

Nearly all of the cases of salpingitis are caused by the vegetable parasites, the gonococcus being the chief offender. Streptococcus, staphylococcus, pneumococcus, bacillus coli communis and tubercle bacillus play important parts. I believe that further investigation will show that the colon bacillus is an important factor in cases associated with appendicitis and gall-bladder disease.

Tubal infection will result in either a catarrhal or a purulent

salpingitis. The catarrhal form may become chronic or it may by occlusion of the ostia, become a hydrosalpinx. It may become purulent. In the purulent form the tube may remain purulent, provided the inflammation is not intense. If the ostium become sealed a pyosalpinx results. In time the bacteria lose their virulence and even die out, leaving the pus sterile.

By deposits of the formed elements, the pyosalpinx may be converted into a hydrosalpinx.

In the literature I find very little mention of bacterial examinations in cases of the catarrhal form of the disease. It is probable that the same group of microbes is to be found in the catarrhal as in the purulent form and that the difference in manifestation is to be accounted for by varying degrees of virulence in the infecting organisms and in differences in the resisting power in the individuals.

The following table shows the results of bacterial examinations in 684 reported cases of pyosalpinx. It is obvious that deductions made from these records will be faulty for various reasons.

In the first place, although all the cases were caused by bacteria, we find 55 per cent. sterile at the time of examination. This fact brings up many questions demanding answer.

1. What causes the death of the bacteria?
2. Which organism succumbs most easily?
3. What length of time is necessary to insure a sterile condition?
4. What antagonism exists between different bacteria in pus sacs?
5. May sterile pus sacs be reinfected?
6. What may be learned of the alterations in virulence of these germs? etc., etc.

As to the accuracy of the examinations, this may be said: In some of the cases only a cover-glass smear was made; in other cases a cover-glass smear and culture; while in a few, animal experiments were resorted to. In some cases, when the smear showed nothing, the culture or animal experiment revealed the infecting microbe. Of course individual differences of technique and skill also exist. The tubercle bacillus is excluded from this table for two reasons: (1) The failure of most authors to include it, and (2) because ordinarily the lesion caused by tuberculosis is not pyosalpinx.

	Sterile	Gonococcus	Staphylo- and Streptococci, either or both	Pneumococcus	Bacilli Coli Communis	Typhoid Bacillus	Bacilli Malignant Edema	Pneumo-Bacillus of Fried- länder	Saprophytes	Total	
1 Charrier	6	9								15	
2 Hartman and Morax	13	13	4	2	1					33	
3 Kelly	28	8	1						1	38	
4 Koch						1a			1a	1	a=mixed.
5 Legros	1									1	
6 Martin	63	21	7	5	2				11	109	
7 Menge	68	22	5						2	97	
8 Orthmann	7	1								8	
9 Prochownik	5	1	21							27	
10 Reichel		1								1	
11 Schäffer	10								1	11	
12 Schauta	69	23	15		1					108	
13 Schenk								1		1	
14 Schmitt		1								1	
15 Stemann		1								1	
16 Strassmann									1	1	
17 Wertheim	5	16	1						1	23	
18 Westermark		1								1	
19 Whiteside	9	7	3	1	1				6	27	
20 Witte	15	7	4	4a			1a		9	39	a=1 case mixed.
21 Zweifel	32	8	3	1						44	
22 Rist	3	2	1a		1a				1	7	a=mixed.
23 Mackenrodt			1							1	
24 Durck			1							1	
25 Bellei	5	1	12a		1				3a	20	a=2 cases mixed.
26 Walsh, G.	9	7a	5a		4a				4	25	a=7 cases mixed.
27 Frommel				1						1	
28 Andrews, F. T.	26	5	2		7a				4a	42	a=2 cases mixed.
Total.....	374	155	86	14	18	1	1	1	45	684	

Sterile	55.	per cent.
Only Saprophytes.....	6.	"
Gonococcus.....	22.5	"
Staphylo- and Streptococcus..	12.	"
Pneumococcus	2.	"
Bacilli Coli Communis.....	2.5	"

(a.) *Gonococcus*.—In all probability the usual route of gonococcus infection is along the uterine mucosa to the tube. However, transmission through the lymph spaces doubtless occurs, as is indicated by the frequency of inguinal adenitis. The blood vessels also may carry the infection to the tube, just as in all probability they carry it to the heart and joints in gonorrheal en-

docarditis and arthritis. Moreover, Kraus has recently demonstrated the gonococcus in the neighborhood of the vessel wall.

In the pus of a pyosalpinx the gonococcus is usually found alone. Of Kelly's 8 cases, and Rist's 2 cases, all were so. Wiedemann, out of 7 cases, got a pure culture in 4. In the other three he found one of gonococcus and staphylococcus, one of gonococcus and streptococcus, and one of gonococcus and a *thick* bacillus. Of the 5 cases of Whiteside, one contained another bacterium. Of the 13 cases of Hartman and Morax only one showed a mixed infection, and that was with bacillus coli communis. Thus, in 36 cases in which the gonococcus was present, other bacteria were found but five times. Two cases (Saulman and Williams) have been reported where the tubercle bacillus was present with the gonococcus.

(b.) *Streptococcus* and (c.) *Staphylococcus*.—Septic infection due to streptococcus or staphylococcus is, according to the statistics, about one-half as frequent as the gonorrheal form. Even this is probably too high a proportion, as probably the sterile cases are much more often gonorrheal in origin. It seems proper to consider these two organisms under one head, since in a large proportion of the cases they are found together and their local action is much the same.

The great majority of cases occur during the age of menstrual activity, labor and abortion, being, indeed, the infecting agent in most cases. That this is not always the condition many cases attest. In one of Zweifel's cases the patient was a virgin twenty-one years old. She had previously had typhoid. Probably infection may occur by direct extension from the uterus through the uterine ostium, or from the abdomen through the fimbriated extremity, or through the blood vessels; but perhaps with these organisms more than with the others under discussion the tendency is to infect through the lymph spaces and vessels from the primary seat of infection in nearby organs, such as the vagina and uterus.

The streptococcus is more often found alone than the staphylococcus. They were, however, usually found together. The occurrence of various saprophytes with the streptococcus and staphylococcus was frequent in Witte's cases; the gonococcus was found once with streptococcus, once with staphylococcus, while in one of Rist's cases the streptococcus and bacillus coli communis were associated.

(d.) *Pneumococcus*.—The pneumococcus of Fränkel has been

reported in fourteen of the cases collected. The fact that in none of these cases in which a full report of the case was made was there a previous history of pneumonia, leads to the belief that this micro-organism reached the tube by way of the natural passages rather than through the blood. Such cases as that of Freminel, where the pneumococcus was found in the pus of a pyosalpinx which followed a case of placenta previa, substantiate this view. Mixed infection does not seem to be the rule. Martin does not state whether in his five cases other bacteria were present or not. Of the remaining eight cases, the two of Hartman and Marx, Zweifel's, Whiteside's and two of Witte were of the pneumococcus alone. Of the remaining two of Witte, one showed mixed infection of the pneumococcus with a thick bacillus, probably saprophytic, while the other showed the pneumococcus pyogenes and the bacillus of malignant edema. According to Whiteside, the contents of the pus sac in a pneumococcus infection, as in infection with the bacillus coli communis, is thinner and less purulent.

(e.) *Bacillus Coli Communis*.—The bacillus coli communis was found in 18 of the cases collected and in many of the cases the infection was mixed. It is very probable that in a majority of cases the infection was either primarily a mixed one, or that the infection by the bacillus coli communis is entirely secondary. It is easy to see that this germ may, through lack of proper cleanliness, pass along the natural passages to the tube. Or, again, a tube having become adherent to the rectum or other portion of the bowel, the colon bacillus may have reached the already inflamed tube along the lymph spaces of the adhesion.

It is possible that the bacillus coli communis may pass through the wall of the intestine to the peritoneum and, passing along its surface, reach the abdominal ostium of the tube and there set up an inflammation.

(f.) *Typhoid Bacillus*.—The exact part played by the typhoid bacillus in salpingitis following typhoid fever is much in question. Mabit had a case of what he considered a post-typhoid salpingitis, which he evacuated through the uterus, but failed to find typhoid bacillus in the discharges. Jos. Koch has reported a unique case in a woman of twenty-eight years, whom he operated upon for salpingitis. He removed a pus sac from the left side. On examination of the contents the typhoid bacillus, together with some saprophytic bacteria, was found. The bacteriological examination was very thorough and there can be little doubt as to

the identity of the typhoid bacillus. The woman had had typhoid fever when sixteen years old. Koch was inclined to the view that the bacteria had reached the tube by way of the uterine ostium rather than by the blood, since the presence of the saprophytic bacteria could not be explained if infection occurred by way of the blood vessels. Since the bacillus typhosis has been found in the body, notably the gall-bladder, and also in the bones, years after recovery from typhoid fever, it would be possible in the case that the germ had reached the tube by the blood and then set up an inflammation, the saprophytes reaching the tubes along adhesions which this had formed with the rectum or intestines.

(g.) *Bacillus of Malignant Edema*.—In one of Witte's cases the bacillus of malignant edema was found together with the pneumococcus and the staphylococcus. The presence of the bacillus of malignant edema was confirmed by animal injection. The woman was twenty-eight years old, and the left tube and ovary were involved. The tube was filled with pus and the ovary contained a bloody, gelatinous mass the size of a hen's egg.

(h.) *Pneumobacillus of Friedländer*.—Schenk reports a case of left-sided salpingitis in a woman forty years old. The salpingitis developed soon after confinement. The uterus was thickened by inflammation, the left ovary microcystic and containing some small abscesses; the right adnexa inflamed, while the left tube was full of pus and showed a small abscess in its anterior wall. On examination of the pus of the pyosalpinx the bacillus of Friedländer was found. Schenk regarded the case as primarily gonorrheal, a secondary infection with the bacillus of Friedländer having taken place from the gut or the vagina.

Tetanus.—Platen and Aubert have reported a case of tetanus following a case of right salpingitis, with removal of the cervix and uterus. Death took place twenty-five days after the operation, the patient having shown all the symptoms of tetanus. They could not trace the source of infection. No bacteriological examination was made.

(i.) *Saprophytic Bacteria*.—Various saprophytic bacteria have been found in the pus of pyosalpinx. Their pathogenic properties are presumably nil. Rist found among his cases the *bacillus thetoides*, the *bacillus fragilis*, *staphylococcus parvulus* and several different large and small cocci and bacilli which he was unable to identify. Whiteside found the *bacillus mesentericus* in two of his cases and the *micrococcus tetragenous* in one. Whitcomb found various bacilli and cocci which he describes but does not

name. Robb and Ghriskey have reported a case of double pyosalpinx together with an ovarian abscess, in the pus of which the *bacillus proteus Zenkeii* was found.

Infectious Granulomata.—Infectious granulomata affecting the tube, with the exception of tuberculosis, are very rare and not important. I am able to find no case in which invasion of the tubes by the lepra bacillus or the bacillus of glanders has been reported.

(a) *Tuberculosis*.—Tuberculous disease of the Fallopian tube is comparatively common and of a high degree of importance. The following statistics may give some idea of its relative frequency. Veit gives the following:

von Winckel, in 575 abdominal sections, 5 cases.

Donhoff, in 509 abdominal sections, 14 cases.

Schramm, in 3,386 abdominal sections, 34 cases.

Total.—In 4,470 abdominal sections, 53 cases, or about 1.5 per cent.

Frerichs, in 96 abdominal sections on tuberculous women, encountered tuberculosis of the tubes 12 times, or 12.5 per cent.

von Rosthorn (Wien), in 40 abdominal operations on inflamed uterine adnexa, encountered tuberculosis 2 times.

Martin, in 620 cases, 17 times.

Williams, in 91 cases, 7 times.

von Rosthorn (of Prague), in 103 cases, 5 times.

Penrose and Beyea, in 52 cases, 9 times.

Total.—In 906 cases, 40 times, or 4.4 per cent.

Kundrat (Findlay), in 140 cases of diseased uterine adnexa, found tubercular salpingitis 4 times.

Menge (Veit), in 70 cases pyosalpinx, found tuberculosis 7 times.

Whiteside, in 30 cases pyosalpinx, found tuberculosis 3 times.

Total.—In 100 cases, 10 times, or 10 per cent.

It is difficult to obtain statistics on the relative frequency of tuberculosis of the tube in comparison with that of the other female genitalia. In primary genital tuberculosis W. Meyer (Findlay) found the tubes the seat of the disease in 57 out of 67 cases.

Etiology.—Predisposing Causes of Tuberculosis.—The age at which the tuberculous disease is most often encountered is between twenty and forty years. Bruardel (Williams) has reported a case in an infant ten weeks old, while Kozywicki has reported one in a woman eighty-three years old. Schramm sums

up the ages of his patients as follows: 20 to 30 years, 12 cases; 30 to 40 years, 13 cases; 40 to 50 years, 5 cases; 50 to 60 years, 2 cases; over 60 years, 2 cases.

Orthmann, in summing up the cases of primary tuberculosis collected by him, found the ages to be: 17 to 20 years, 3 cases; 21 to 30 years, 13 cases; 31 to 40 years, 3 cases; 41 to 50 years, 5 cases; 51 to 60 years, 1 case; over 60 years, 2 cases; questionable, 2 cases.

Modes and Routes of Infection.—Williams divides the routes of infection as follows:

I. From areas of tuberculosis already existing in the patient.

a. Infection through the blood.

b. Infection from peritoneum.

c. Infection from other organs.

1. Intestines.

2. Rectum.

3. Bladder.

II. Infection from without.

III. Infection by organisms excreted by patient herself.

Probably if the last two main heads are considered as primary genital tuberculosis, and the first head as secondary, it will be just as complete and more simple.

Primary Tubal Tuberculosis.—As to frequency, Orthmann states that it occurs in 18 per cent. of genital tuberculosis in women. His collection of cases follows:

Mosler, in 46 cases, found primary tubal tuberculosis 8 times.

Schramm, in 47 cases, 1 time.

Frerich, in 15 cases, 3 times.

Hegar, in 6 cases, 1 time.

v. Kozywicki, in 12 cases, 2 times.

Hiberg, in 25 cases, 10 times.

Martin, in 17 cases, 3 times.

Total.—In 168 cases, 28 times, or 18 per cent.

He concludes that primary genital tuberculosis most often affects the tubes. N. Meyer (Findlay), in 67 cases of primary genital tuberculosis in women, found the tubes the seat of the affection 67 times. Several modes of primary tubal infection with tubercle bacilli are possible. The infectious agent, according to most writers, passes over the uterine mucosa, leaving it intact, and affecting only the tube. Some, however, think that the uterine mucosa is primarily affected superficially, and that

the mucosa is shed, carrying the tubercles with it, the infection of the tube being really secondary to the infection of the uterus.

The manner of the introduction of the bacillus is varied. Through use of infected napkins, douche points, etc., the germ may reach the uterus.

The question of direct infection by the male has been much talked of. This mode of infection seems highly probable when we consider the frequency of genital tuberculosis in the male. Jani has demonstrated tubercle bacilli in these organs in a tuberculous patient, when the organs themselves showed no sign of disease. Tuberculosis of the glans penis might offer means of infection. However, if we admit a primary tuberculosis of the tubes, there can be no doubt that genital tuberculosis in the male may be a strong factor, especially when we consider that spermatozoa may carry the infection. There must be recognized the possibility of a primary genital tuberculous infection of vagina or uterus, with transportation of the bacilli to the tubes by way of the lymph or blood vessels.

Secondary Tubal Tuberculosis.—This is the more common form. The infection may be carried by way of the blood channel from the lungs or bronchial glands, or the infection may be part of a general miliary tuberculosis, from tuberculosis of the hip joint, or from Pott's disease the tubercle bacilli may be carried to the tubes by the blood or lymph channel and there set up their destructive processes.

Infection of the tube from tuberculosis of the peritoneum by way of the abdominal ostium has been considered for a long time to be the common mode of infection. However, at present there is a tendency more and more to regard the infection of the tube as coming by way of the blood and to look upon the peritoneal tuberculosis as often secondary to the tuberculosis of the tube; infection of the tube direct from the intestine by way of lymph spaces and adhesions, or by perforation of tuberculous ulcers of the rectum, as Mosler reports (Senn), or by perforation of a bladder ulcer, will account for some cases.

Mixed Infections.—Saulman and Williams have reported cases in which the tubercle bacillus and the gonococcus were found together in the pus of a pyosalpinx. Infection with other bacteria, such as the colon bacillus, streptococcus and saprophytic bacteria, can be explained as coming in the same way as does the tubercle bacillus, either along the genital tract or along adhe-

sions; or, where a tuberculous tube has become adherent, secondary infection along the adhesions might occur.

(b.) *Syphilis*.—That general syphilis often affects the tubes there can be little doubt, but that the process is specifically syphilitic cannot in the large majority of cases be determined. In autopsies held on subjects dead of general syphilis there is sometimes encountered a catarrhal inflammation which, on closer examination, reveals nothing of a specific character.

W. Moxon, in a series of 27 cases of what he considered general syphilis, found the tubes diseased in four (V, XIX, XXI, XXVII). He considered the affection to be syphilitic in nature, but the evidence which he gives, as well as his description of the cases, is too inadequate to establish their syphilitic identity, and, indeed, in light of later knowledge, point to some other disease.

The following cases of syphilis of the tube have been reported: one by Ballantyne and Williams, one by Dönhoff and one by Bouchard and Lepine. The case reported by Ballantyne and Williams occurred in an infant seven months old who died of congenital syphilis. The tubal folds were adherent at the apices and miliary gummata were found in the muscularis. Dönhoff found in a child seven days old, dead of congenital syphilis, the tubes thickened and tortuous, the submucosa and muscularis thickened and the mucous membrane showing no change. The case of Bouchard and Lepine is the most typical of all. It occurred in a woman forty years old who had died of congenital syphilis. The abdominal ostium of each tube was closed and in the walls of each were found three gummata the size of a hazelnut. The diagnosis of syphilis was confirmed by the microscope.

Thus we see that true syphilis of the tube is very rare. From these cases, all found at autopsy, no idea of symptomatology can be found.

(c.) *Actinomycosis*.—This disease apparently as rarely attacks the tube as does syphilis, though the comparative recency of its discovery may be one cause of the rarity. Granger Stewart and Miner reported a case in a woman thirty-five years old. The liver and ovaries were affected and the pelvis showed extensive adhesions. In the right tube were miliary abscesses containing colonies of actinomyces, the epithelium was destroyed and there was a marked increase of fibrous tissue in the wall with sclerosis of the arteries.

Zemann has reported a case of what he considered primary actinomycosis of the tube. The woman was forty years old.

Extensive adhesions were found in the pelvis and the right tube showed a marked increase of fibrous tissue in its wall, together with miliary abscesses containing actinomycetes. Abscesses were also found in the liver, lungs and brain.

Lothrop has reported a case in a girl nineteen years old, finding the intestines, omentum, uterus, left ovary and bladder adherent, and many small abscesses in the mass. Both tubes were filled with pus. The right ovary was normal. The bladder wall was perforated. Liver, spleen and kidneys showed amyloid degeneration, both kidneys pyelonephritis, the left, pyonephrosis. The diagnosis of actinomycosis was verified by the microscope and by culture experiments. Although it is not specifically stated that the pus in the tubes showed actinomycetes, it is highly probable that such was the case. At any rate, the tubes must have been involved in the adherent mass, which was thickly set with actinomycotic abscesses.

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INFRAVAGINAL ELONGATION OF THE CERVIX.¹

BY

MARCUS ROSENWASSER, M.D.,
Cleveland, Ohio.

(With three illustrations.)

PRIMARY elongation of the cervix is conceded to be extremely rare. According to Dudley (Dudley's Gynecology, III Ed., pp. 560-561), "The existence of genuine hypertrophic enlargement and elongation of the cervix is not absolutely denied; it is, however, of extremely rare occurrence. . . It is often apparent, seldom or never real." Hirst (Clin. Gynecology, Keating and Coe, Ed. 1895, pp. 234-235) says: "It is a curious fact that hypertrophy of the infravaginal portion of the cervix is much more common in negroes than in white women." He "does not remember having seen a case in the latter, while in his dispensary service it is a common experience to have several marked instances every year of this hypertrophy in negroes."

The case herein reported together with photographs and sectional drawing is one of moderate congenital enlargement of the vaginal portion of the cervix. I say "moderate," because the crude diagrams of the various text-books lead me to believe there are cases developed to a much higher degree. I have not been able to find photographs or accurate measurements of the cases hitherto placed on record.

Mrs. J. T. S., age 24, white, of excellent general health and good family history, has been married two years. She is sterile; her menses are regular, quite free, lasting four days, always attended by severe headache and bearing down. There is no vaginal discharge; her bowels, bladder and urine are normal. Soon after marriage she noticed a small, hard lump drop down into the vagina. This has been gradually growing larger and now irritates the entrance.

On inspection the body protruding between the labia is easily recognized as the vaginal portion of the cervix by the opening

¹Read before the American Association of Obstetricians and Gynecologists at Chicago, September 22, 1903.

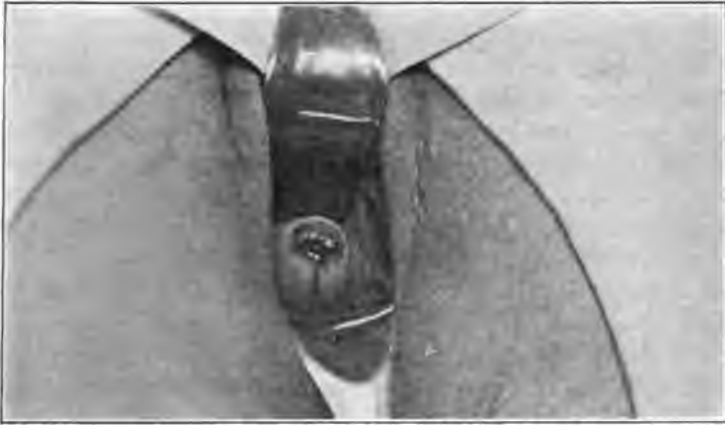


Fig. 1.—Cervix exposed *in situ*.

in its center, which is of normal size surrounded by a small erosion.

On digital examination the vaginal fornices are found normal; the fundus is on a level with the symphysis pubis, but removed from it midway toward the hollow of the sacrum, constituting a retroversion of the first degree. Both ovaries, felt prolapsed in the posterior cul-de-sac, are enlarged but not tender. The uterus is freely movable.

On exposure by retractors, the vaginal portion appears of unusual length, of slightly increased thickness and density, having



Fig. 2.—Cervix drawn up with bullet-forceps.

the shape of a truncated cone covered by normal mucous membrane, and curved forward in the axis of the vaginal tube. Resting in the vagina without traction on the fornices, the length of the anterior surface of the cervix is one inch; that of the posterior, one and one-fourth inches, and of each lateral border, one and one-fourth inches. The sound enters the uterus three and one-half inches; its withdrawal is followed by a free flow of transparent mucous slightly tinged with blood.

The usual treatment by curettage and amputation of the cervix was advised and consent obtained. After completion of the former operation (May 19th), while manipulating the cervix, I noticed that there was room enough in the pelvis to accommodate the cervix in its normal position in the hollow of the sacrum.



Fig. 3.—Antero-posterior section.

Under these circumstances I hesitated to mutilate the cervix by amputation. It seemed to me that if the vaginal portion could be retained in its normal position the chances of impregnation would be greatly enhanced, especially after curettage. In the event of pregnancy the elongated cervix would be included in the expansion of the lower segment of the uterus and in all probability, would be absorbed during the subsequent involution. Even if impregnation did not follow, protecting the cervix from coagulatory disturbances and from sources of irritation, ought ultimately to lead to its atrophy. Instead of amputating, I therefore replaced the uterus and fitted a retroversion pessary.

Since the first fitting immediately after the operation I have changed pessaries three times, increasing the pelvic curve each

time; thus bringing the cervix nearer to the sacrum. I have found some difficulty in overcoming the tendency of the cervix to curve forward, a curve attained in its growth in the axis of the vaginal canal. The patient now wears the support without annoyance of any kind, and reports her last menstruation as being the first in her life without pain.

722 WOODLAND AVENUE.

MODIFIED PORRO OPERATION.¹

BY
CARL WAGNER, M.D.,
Chicago, Ill.

THE first of the two operations was performed on account of an inoperable carcinoma of the cervix of the uterus in the seventh month of pregnancy. The frail patient, a woman thirty-six years of age, always lived in very straitened circumstances, working hard for a living, and gave birth to four children. Never was seriously ill, complaining only of leucorrhea since she gave birth to children. Three and a half months previous to the operation I examined her vaginally on account of a profuse hemorrhage, and found a carcinoma of the cervix as the cause. The malignant growth had acquired great dimensions, extending into the wall of the vagina, and causing great pain in bladder and rectum. Pregnancy of three months was detected. Application of the ferrum candens to the cauliflower-shaped carcinoma arrested hemorrhage and also had a very alleviating influence upon the distress of rectum and bladder. During the following three months she was attended off and on in an ambulatory way at the hospital, the treatment consisting in an antiseptic dressing of the ulcerated malignant growth. At six and a half months of pregnancy, labor pains set in very vehemently. Liquor amnii and blood passed for two days continuously, and the patient failed very rapidly. Size and location of malignant tumor neither allowed natural delivery nor admitted of vaginal Cesarean section. Calculating that in a short time the whole uterus would be the prey of the fast progressing cancer, abdominal excision of the uterus, with every-

¹Read before the Chicago Gynecological Society, Nov. 20, 1903.

thing *in situ*, was decided upon. Abdominal Cesarean section was thought inadvisable also because the uterus left behind, with ulcerations at the carcinomatous cervix, would surely cause the patient to succumb to puerperal fever. Dr. Holmes, who, at the time of the operation examined the case, and Dr. C. S. Bacon, who also inspected the malignant growth, when I had exposed it with Syms' speculum, coincided with me in regard to the measure to be taken. The operation consumed seventeen minutes. The amputated uterus was opened by Dr. Holmes, the fetus extracted and, being alive, was put in a warm water bath. It lived two hours. The mother made an uneventful recovery, and it is to be noted that since the operation was performed the malignant growth is spreading very much more slowly, though the patient represents now, some five months after the operation, the characteristic clinical picture of carcinomatous cachexia.

The second case concerns a woman thirty-nine years of age, who gave birth to six children. Two weeks before the delivery of the first baby she fell down a flight of stairs, which she holds responsible for a still-birth. Two children died of scarlet fever; three are alive. The middle of June, a year ago, I saw the patient for the first time. She had then been in bed two months, and was treated by a hydropath for heart disease, which she did not have. She was very emaciated; had great pains in the distended abdomen, which was very hard and tumified in the left inguinal region; temperature, 102° ; vaginally, an extensive cervical laceration to the left, and a hard mass in the left parametrium and cul-de-sac were found. Constipation and pressure upon the bladder made the patient suffer very much. Curettage, mending the cervix, abdominal removal of pus and exudate mass, freeing the retroflexed uterus from adhesions which bound it down to the rectum, raising the uterus, putting it in contact with the parietal peritoneum, retaining it there by Miculicz drainage placed behind it, corrected her ailments and allowed the woman to take up her household duties again, after three and a half weeks. Six months after operation, in good health, she conceived again. Pregnancy went on apparently normally; during the last four months of her pregnancy, previous to full term, typhoid fever haunted the whole family. Her three children were stricken down in succession with severe forms of typhoid, and one of the children, before it had typhoid, underwent an operation for appendicitis. She was left absolutely alone to

take care of these children. Before the last one of the children recovered from its attack of typhoid she developed a serious form of typhoid herself. Seven hard weeks of suffering followed. During this illness I was sent for a number of times, day and night, on account of these supposed labor pains. There seemed to be slight contractions of the uterus, which caused a very intense pain exactly in the median line, extending from a point about an inch and a half below the umbilicus into the vagina. Vaginal examination elicited a point corresponding to the internal os as the most sensitive one. Through the thin abdominal wall a hard and rigid tissue could be felt, quite different from the soft condition of the uterus. My contention was that an abnormally strong adhesion band had formed at the place where the uterus was held in apposition with the parietal peritoneum after the operation a year ago. I further contended that this suspension interfered painfully with the motion of the uterus, and the physiological hyperplastic expansion of the uterus. As the time of labor approached I repeatedly proposed to the family to have her removed to the hospital, explaining to them that I anticipated serious complications for the following reasons: First, on account of the bearing which the effects of her former illness and operation of the year previous would have on this labor; secondly, because her surroundings were quite inadequate for complications of labor; and, thirdly, because only the best hospital care could come in consideration for a woman so frightfully debilitated through all the troubles and cares incident to the typhoid of her children, and her struggles between life and death during her own typhoid at the eve of delivery.

But she insisted upon remaining at home to take her chances in waiting, as she labored under a presentiment that she could not live, anyway. After the third day she became so weak that she could not leave her bed. At the seventh day of labor, chills, nausea, and fever of $102\frac{1}{2}^{\circ}$ set in. It was then that she herself asked to be taken to the hospital. She entered that night the Passavant Hospital, where Dr. Holmes saw her, with me, shortly after, in consultation. We decided upon abdominal hysterectomy, for the following reasons: First, the undilated cervix remained retracted so far up and held in position there by strong adhesion bands that delivery in the natural way could not be expected; second, for the same reasons *accouchement forcé*, or Dührssen's incisions and application of Tarnier's forceps was

out of the question; third, for the same reason, a vaginal Cesarean section could not come into consideration; fourth, neither would abdominal Cesarean section have been the proper procedure, as it would have left a uterus behind that was (a) potentially infected, and cause the patient to succumb afterward from puerperal sepsis; (b) full of raw surfaces at the places where adhesions were severed which would give rise to formation of new and more serious adhesions; (c) which, during the course of contraction and traction upon the adhesions to the intestines, cause kinking of the bowels, and serious obstructions; (d) which might give rise to fatal hemorrhage on account of the adhesions preventing the uterus from complete enough contraction; fifth, Porro operation consumes more time, involves greater dangers, from the point of view of hemorrhage, with absolutely the same material effect. At the eighth day, in the morning, the operation was performed, the condition of the patient not having changed any over night. The incision was comparatively small, not extending beyond the lower margin of the umbilicus. Adhesions were immediately encountered all over the uterus. The heavy band which had formed at the anterior part of the uterus presented the greatest point of interest and explained very readily why the cervix could not descend farther down into the vagina. The size of this band was two inches in width, and three-quarters of an inch in thickness, with good sized blood vessels contained in it. It had produced an almost rectangular kink of the uterus in the region of the lower segment, and internal os; to some extent, through lateral fibers constricting this part of the segment, and also having an influence upon the direction of the cervix; namely, directly backward. It seemed clear that the head of the child could not engage properly in the parturient canal. This band was tied off in two sections with double ligatures and severed. Immediately the kinked uterus straightened out, the release allowing a distension of from four to five inches, but even then the uterus could not be developed out of the abdominal cavity until a number of heavy adhesion bands leading to the bowels and omentum, broad ligament, etc., had been dissected off. The next step consisted in tying the ovarian artery and quickly stripping down the side of the uterus, the broad ligament. Instead of proceeding as usual, by tying off the uterine artery on both sides and then forming a cuff which must be caught with hemostats, as the knife is carried around the uterus, and sometimes necessitat-

ing many forceps by the time the amputation is completed, and frequently accompanied by very great hemorrhage, it occurred to me that with the introduction of a very simple feature, work could be very much facilitated, time saved, and absolute control of hemorrhage insured. While the assistants lifted up the uterus with some traction, I grasped the elongated cervix with my left hand, from behind very firmly, compressing it tightly; then I placed four forceps, one on each side, and one in front, and one posteriorly, right over my hand in the tissue of the uterus. Those



Author's modified porro operation.

forceps were inserted there for the purpose of serving, first, as a landmark for the incision; second, as levers to lift up the stump with after amputation, if necessary, or to prevent the stump from slipping out of my hand. With the scissors held in a slanting position, the outer blade higher than the inner, I amputated the uterus with a few sweeping, heavy strokes, while the assistant, the moment the uterus was opened, introduced his finger to hold back the head and membranes. By holding the scissors in this position, and keeping the blade inside of the uterus, in careful contact with the mucous membrane of the

uterus, I first averted injury of the head and membrane, I had a conically-formed stump which allowed easy adaptation. This whole procedure took one minute which is of the highest importance for the life of the child. The closing up of the stump was a very easy task, then it still firmly and conveniently for work in my hand absolutely bloodless. In the meanwhile, Dr. Herbert Hooper delivered the amputated uterus, and reported child, which weighed nine pounds, was in the best condition, announcing its existence by a good, normal cry. The mother did not show any symptoms of shock, made a rapid recovery, and left the hospital in twenty days. The modification of Porro's operation has proved, in my opinion, a safer and simpler procedure than the statistics of the Porro operation show, and, with the introduction of the feature mentioned above, the operation has been reduced to a minimum consumption of time and loss of blood.

Three cases with absolutely different complications resulted in mortality from the operation, and in the two cases the fetus was alive before the operation, it was delivered.

PELVIC CELLULITIS.¹

BY

R. P. McREYNOLDS, M.D.

PELVIC cellulitis claimed from all of the older writers a large amount of attention and consideration.

Sir James Y. Simpson was the first to give it the name of Cellulitis, and this name is generally preferred because it describes the nature and location of the disease better than the terms periuterine cellulitis, parametritis, periuterine phlegmon, etc.

Perhaps during the past few years no part of the history of medicine has been the subject of such careful and scientific investigation as the diseases of the female pelvic organs. It is therefore to be wondered at, if in the light of modern knowledge the theories and prevailing ideas of a few years ago are known to have been false. A number of cases call

¹Read before the Section on Gynecology, College of Physicians, Philadelphia.

scribed as pelvic cellulitis must have been in reality cases of endometritis or metritis associated with salpingitis; salpingo-oophoritis or pelvic peritonitis. However, it can not be doubted that pelvic cellulitis as a distinct and separate disease does exist. The exciting cause is always some form of septic infection introduced from without the body or extending from some infected foci within the body. The chief predisposing cause is the increase in the connective tissue and lymphatics accompanying pregnancy, together with the traumatism and bruising of the tissues attendant upon labor. It would seem theoretically almost impossible to have a severe streptococcus infection commencing in the uterus, extending to the cellular tissue around the uterus, and not involving the ovary, the Fallopian tube or pelvic peritoneum.

But we know from clinical experience that such cases exist. It may be that during some stage of the infection all of the parts are more or less involved, but some undergo complete resolution and become perfectly normal, others remain permanently diseased. I think in a great number of cases the cellular tissue is the seat of an inflammatory exudate which does not go on to supuration; but is quickly absorbed. On the other hand when pus forms it seeks an outlet in several directions; it may rupture into the vagina; the rectum; the bladder or into the peritoneal cavity; or it may burrow behind the pelvic fascia and escape from the pelvis through the obdurator or sacro-sciatic foramen. It may pass between the two layers of the broad ligament, and by dissecting the pelvic fascia from its attachment to the ileo-pectoneal line or by passing along the nerves which penetrate the fascia gain access to the iliac fossa and cause an iliac or ileo-psoas abscess. If the infection were taken up by the lymphatics, the lumbar glands would become involved, and if they should suppurate the pus would probably find its way into the sheath of the psoas muscle.

In the following case the pus passed in between the two layers of the broad ligament to the iliac fossa.

Mrs. R., age 26, married; admitted to the Presbyterian Hospital, Sept. 19th, 1903.

History.—One child, 8 years ago, normal delivery, except that she was badly torn. In the later part of July of this year, when two months pregnant, had a miscarriage. She had been practically confined to bed since this time (10 weeks) suffering from chills, fever, uterine hemorrhage and a foul discharge. During the first four or five weeks of her illness she noticed no particular

pain in the leg, but after that time suffered intensely from pain radiating from the left groin down the inner side of the thigh, causing the leg to be constantly drawn up. When I first saw her she was emaciated, septic, temperature ranging from 99 to 102, left leg drawn up and any attempt to straighten it caused excruciating pain. Vaginal examination showed the uterus fixed and a large, indefinable tender mass on the left side, which I thought was possibly a tubo-ovarian abscess. Thinking that perhaps the mass might be absorbed, and that her general health would be improved by rest and stimulating treatment, I deferred operation until Oct. 17th. I then opened the abdomen in the median line and to my surprise found the uterus, ovaries and tubes normal. The left broad ligament was distended and evidently contained pus between the layers. I closed the abdominal wound and two weeks later by an extra-peritoneal incision above Poupert's ligament and extending down beneath the iliac fascia opened up a large abscess whose cavity extended downward in the direction of the psoas muscle. The wound was drained and the woman made a satisfactory recovery.

In the next case the infection seemed to travel up around the ureter and produce what might be called perinephritic psoas abscess.

History.—Mrs. K., age 30 years, the mother of eight children, admitted to the Presbyterian Hospital, April 7th, 1902. Ten days previous to admission had a miscarriage (6 months pregnant). Following this she had chills, fever, uterine hemorrhage, foul discharge, severe pain in left groin radiating down the inner side of thigh causing her to keep the left leg drawn up. When I saw her she had the appearance of being profoundly septic; temperature ranging between 100 and 104, lower abdomen rigid and tender. Vaginal examination revealed the uterus enlarged but movable, and to the left a mass which seemed to extend up in the peritoneal cavity as high as the umbilicus. I tried to improve her general condition by stimulating treatment, but in a few days saw that she was failing, so I decided to operate at once. The abdomen was opened in the median line. The uterus and adnexa were found to be normal; along the left psoas muscle there was some swelling and in the region of the left kidney a pronounced retro-peritoneal mass bulged into the peritoneal cavity. The abdominal wound was closed; another incision was made in the lumbar region and a large abscess, situated around the left kidney, was opened and drained. The abscess cavity ex-

tended downward for quite a distance in the direction of the psoas muscle. The woman made a slow but complete recovery and is to-day perfectly well.

In the next case the cellular abscess cured itself by rupturing into the vagina; but the disease in the tube remains and will I think eventually require an abdominal operation. I saw this woman in consultation with Dr. Guthrie, who has very kindly supplied me with the notes in the case.

She is 37 years old, the mother of three children, the first two delivered with forceps causing an extensive laceration of the cervix and perineum. The third child was born Oct. 25th, and was in every way a normal delivery. On the 4th day of the puerperium she began to have chills, and the temperature during the next two days gradually went up to 105. I saw her Nov. 2nd. She was apparently intensely septic, pulse very weak, and temperature ranging between 100 and 105, severe pain in right lower abdomen. Vaginal examination showed the uterus movable, large and boggy; the cervical canal patulous; some mucopurulent discharge from vagina, but no odor. I immediately curetted the uterus to see if any part of the membranes had been retained, gave a copious intrauterine douche of sterile water, and packed the vagina with sterile gauze. After this she seemed to improve for two days, but when I examined her on Nov. 7th I found her decidedly worse than when I first saw her. The muscles on the right side of the abdomen were rigid and the slightest pressure caused excruciating pain. By vaginal examination I was able to outline a large mass to the right of the uterus. Her general condition was also worse; she was weaker, temperature still remained high, pulse rapid and very weak. We felt that she was not able to stand the slightest shock, and consequently did not think it safe to attempt operation of any kind. The expectant treatment was continued, and fortunately a few days later she began to discharge per vaginam a lot of purulent material. The abscess had evidently broken. She then began to very gradually improve. The convalescence has been tedious. A phlebitis developed in the left leg which very materially retarded her progress. When I examined her last, on Nov. 27th, I found that the mass had entirely disappeared, but there still remained a salpingitis.

The treatment of pelvic cellulitis may be divided under two heads; operative and non-operative. The older surgeons selected the latter treatment and endeavored by the use of morphine, rest,

stimulating treatment and hot vaginal douches, to keep the patient supported until the pus could discharge itself, or until it pointed at some spot where it could be easily evacuated. This was often a long and tedious process, but a number of the patients ultimately recovered.

The tendency at the present time is for early operation with the idea that it prevents absorption of septic material through the lymphatics and blood vessels; that it minimizes the danger of septic peritonitis and prevents the burrowing of the pus into places where it may cause serious and often fatal results.

The operation of choice is of course the one that will save the greatest number of patients and leave behind the fewest complications. Each case is a law unto itself and no hard and fast rule can be laid down which will apply to all of them; as sepsis is at the bottom of the trouble the operation which gives the most perfect drainage is the one to be selected.

Dr. Pryor, of New York, has recently published the results of his operation in which the cul-de-sac of Douglas is opened per vaginam, and a number of strips of iodoform gauze are packed in so as to practically fill up the utero-rectal space. I have not had an opportunity to try this operation, but it seems to me to fulfill well the indications to be met in the majority of cases. If, however, you feel sure that the primary focus of infection has attacked the anterior wall of the uterus, and the cellular tissues between the uterus and bladder is involved, I think an abdominal section would be more satisfactory. If need be gauze drainage could be carried from the abdominal wound through into the vagina; it would also afford more accurate information in regard to the condition of the tubes and ovaries and appendix and enables us to deal with them accordingly.

TUBERCULOSIS OF THE FEMALE GENITALIA AND PERITONEUM.

BY

JOHN B. MURPHY, A.M., M.D.,
Chicago, Ill.

(Concluded from page 35, January number.)

SECTION VII. TUBERCULOSIS OF THE OVARY.

Frequency.—This variety is apparently relatively infrequent. Spaeth, in 119 cases of genital tuberculosis, found 15 cases of the ovary (12.6 per cent.). Merletti, in 172 cases of genital tuberculosis, found 27 of the ovary. Orthmann, in 103 cases of genital tuberculosis, found the ovary involved in 33 per cent. The same author collected from various sources 177 cases of ovarian tuberculosis; but 57, however, were confirmed by microscopic examination. Of these 57 absolute diagnoses, 9 were tubercular ovarian cysts and 48 (27 bilateral; 21 unilateral) were tubercular ovaries.

Source of Infection.—The isolated position of the ovary renders the solution of the source of infection of unusual interest. Primary tuberculosis of the ovary is quite unusual. For instance, Schöttlander collected 157 cases, none of which were primary. However, several cases are on record (Oppenheim-Spaeth) in which the focus in the ovary was the only one in the genital organs. According to Wolff, in 60 per cent. of tubal or peritoneal tuberculosis the ovaries are involved also.

There seem to be two sources—the blood-current and the Fallopian tubes and peritoneum. Hematogenous infection has been proven by Schöttlander's experiments, this observer having been able to produce primary tuberculosis of the ovary in animals. In the human being it is especially likely to occur during the course of acute miliary tuberculosis of the lungs, when large numbers of bacilli gain entrance to the blood stream.

The usual mode of infection, however, is by contiguity, or, in some cases, by the lymphatics. Probably the most frequent source is the peritoneum and tubes. In the 48 cases of true ovarian tuberculosis collected by Orthmann and verified by microscopic ex-

amination, the infection was traced to the tubes in 26 cases and the peritoneum in 22. Schöttlander states that while the peritoneum is the usual source of infection in some cases the tubes are at fault. According to Wolff, tuberculosis of the peritoneum always spreads to the ovary unless this organ is protected by adhesions.

Schöttlander claims the disease process in the ovary begins as a peri-oophoritis and that the deeper portions become infected through the lymphatics. During ovulation, the periodic rupture of the Graafian follicles acts as a mild traumatism and affords an atrium for the invasion of bacilli. In a case of Orthmann's, incision of a corpus luteum located near the fimbriated end of the tube showed tuberculosis. By dissecting up the adhesions, he found the fimbriæ were likewise tubercular and extended directly into the corpus luteum. In this case tubercular peritonitis was also present.

In a recent case (Miss M. N. See history of this case below) operated on by me in Mercy Hospital, the communication to the Graafian follicle was by direct perforation of the tubal wall, producing in this way a tubo-ovarian tuberculous abscess. The abscess in the ovary was the size of a walnut; its sac was easily shelled out, leaving a comparatively healthy though deformed ovary. In most of the recorded cases of tuberculous abscess of the ovary, when a detail of the pathologic changes is given, the tuberculosis is shown to be either of the peritoneum or the Graafian follicle and less frequently in the stroma of the ovary.

Pathologic Anatomy.—This resembles somewhat the same process in the analogous organ, the testis. Primary tuberculosis of the testis practically never occurs except in general miliary tuberculosis; according to Fritsch's experiments, it does occur in the ovary. Tuberculosis of the testis is otherwise always secondary to tuberculosis of the epididymis. (See article, *Tuberculosis of Testis*, by author, *Jour. Am. Med. Ass'n*, Nov. 10 to Dec. 8, 1900.) In the ovary it is frequently secondary to tuberculosis of the peritoneum as well as tuberculosis of the tube.

The disease may manifest itself either as peri-oophoritis (disseminated or diffused), or as true ovarian tuberculosis. The latter may be either miliary (the least frequent), caseous, or tubercular abscess. (The two latter occur with equal frequency.)

The miliary form is often undetected by the naked-eye appearances, and may escape notice. According to Guillemin the evolution of the morbid process may be so rapid that it has progressed

to caseation etc., before operation. The disease may remain limited to the periphery for some time, as in three of Wolff's cases there were tubercles superficially, but no caseation. This type sometimes pursues a very mild and chronic course. In the majority of our cases, miliary tubercles existed on the surface of the ovary as tuberculosis of the peritoneum and tunica albuginea, showing no tendency to penetrate that membrane to the ovarian stroma.

Caseous foci gradually make their appearance and coalesce. In advanced stages the organ is enlarged, soft, fluctuating, filled with pus and caseous matter. The pus cavities which sometimes reach the size of an egg, are probably due to secondary infection, since streptococci are frequent in the pus, while tubercle bacilli are absent.

The organ may reach enormous size and yet show no signs of softening, as in a case of von Franque's, in which it reached the size of a fist, and on section was found filled with yellow nodes, the largest the size of a walnut. These nodes were composed of round cells which had partly undergone fatty changes. There were no signs of caseation, but epithelioid and giant cells were seen in the stroma. The tube adhered strongly to the ovary and the abdominal end was impermeable.

In several cases reported by Penrose and Beyea, the parovarium was involved—the first time, according to these authors, that this has been noticed.

Pozzi reports that the right ovary is more often affected than the left, as 5:2.

In no place in the literature did we find evidence showing the inherent reparative power of the ovary when once attacked by the tuberculous process. How it resists invasion or how it repairs damage already done.

Symptoms.—The cases of primary tuberculosis of the ovary are so few that practically nothing has been learned as to the symptoms. The symptoms in the secondary cases are those of the tubal or peritoneal disease from which it originates.

Treatment.—Since ovarian tuberculosis is either discovered accidentally or complicates tuberculosis elsewhere, it will be removed with the diseased tubes or during the treatment of tubercular peritonitis. If both ovaries are involved in young individuals, in many cases the ovary can be conserved by shelling out the tuberculous Graafian follicles and closing the rent with catgut suture. Many of these may be shelled out of the same ovary and

the organ be preserved in practically its normal condition; there is no more reason for removing an ovary because a Graafian follicle or the tunica albuginea is involved than there is for amputating a leg because there is a tuberculous focus in the tibia or even a tuberculous genu-synovitis.

The ovary has rarely been diffusely involved in the tuberculous process in the cases under our observation. The following is one in which the left ovary was the seat of tuberculous abscess and represents the most frequent type we encounter.

Miss M. N., æt. 32, admitted to Mercy Hospital August 28, 1903. Two months ago patient had an attack of pain in the left lower abdomen. Pain was severe and of a sharp shooting character. Did not vomit, was not nauseated and abdomen was not distended. Temperature was not taken. Bowels constipated at this time, as they always have been. Her physician said she had obstruction of the bowels and she was in the hospital for ten days, but was not operated on. Since then she has had occasional soreness in left lower abdomen when she coughs or laughs. General health good; weight normal.

Previous History.—Since five years ago has had quite profuse leucorrhœa. Patient gets up once at night to urinate and has a little burning during passage of urine. Has had no serious illnesses. Menstruation normal. No history of venereal infection.

Family History.—One sister died of consumption at the age of 22.

Examination of Patient.—Large stature; well nourished. Temperature 99° F. Heart and lungs negative. Abdomen: some tenderness and flatness in left lower quadrant; no masses or tumor to be felt. Kidneys not palpable.

Pelvic Examination.—Reveals a tumor in the left fornix. A mass about three inches in thickness and firmly fixed can be detected by bimanual palpation; there is some induration and infiltration in the right fornix with a small resisting mass resembling a tube. The vesicorectal fold and the Douglas' pouch are thickened and sensitive. No fluctuation can be detected. The uterus is partially movable; not materially enlarged and displaced to the right. Leucocytosis 9,000.

Diagnosis.—Left pyosalpinx, with ovarian or perisigmoid abscess; enlargement of right tube.

Operation, August 31. On opening the abdomen, the parietal peritoneum was somewhat infiltrated and studded with well defined tubercles. The number increased in frequency as the pelvis

was approached, until, in the latter they were confluent. In the neighborhood of the umbilicus there was about one to the square inch and on the intestine and omentum drawn from the upper portion of the abdomen, they were absent. There were a few ounces of straw-colored fluid in the cul-de-sac. The right tube was somewhat enlarged with a constriction to occlusion one-half inch from its fimbriated end. The fimbriæ were free. The body of the tube itself was free from adhesions. There was a constriction three-quarters of an inch from the cornu. The dilatation between the two constrictions was supposed to be due to tubercular endosalpingitis. When opened, however, it contained only a mucopurulent fluid with a granular condition of the mucosa but no tuberculosis. As this tube was closed at its proximal and distal ends, evidently ancient, there was no possibility of infecting it with tubercle bacilli except through the lymphatics or blood. The right ovary was normal and not disturbed. The uterus was free. The mass described in the physical examination was found on the left side resting on the sigmoid and extending from a level with the pelvic brim down the left side of the pelvic wall to its floor. The mass was about two inches long by an inch and a quarter in thickness. The tube entered it above on a level with the fundus. Half way down, a coil of small intestine was organically united to it; the separation was accomplished with difficulty but without perforation. The fimbriated end of the tube was free and everted, with a tubercular ulcer a half inch in diameter on its surface. The ovary and the tube were carefully separated from the sigmoid and removed *en masse*. The tube was as large as an adult thumb and obliterated by a cicatrix at the base of the fimbriæ. The ovary was firmly adherent to the tube and could not be separated without lacerating the wall of the tubercular mass in the ovary. There was a communication between the ovarian abscess and the cheesy mass in the tube. The tuberculosis in the ovary involved a follicle and was the size of a walnut; the tuberculous wall was easily shelled out after the adhesions were removed. The remainder of the ovary was normal. The tube was the size of an adult thumb, and was filled with tubercular débris. The last and most ancient caseous mass was three-quarters of an inch from the cornu.

It seemed clear from the pathologic findings, that the tubal lesion was primary; that the wall of the tube ruptured into an adherent follicle, producing the nodule in the ovary. The peritoneum of the sigmoid was destroyed but there was no perforation found. The

tubal stumps were buried beneath the broad ligaments on both sides and the abdomen closed.

The following is a report of the pathologic findings, from Dr. W. A. Evans:

"Referring to your specimen of tissue of Miss N. submitted to us on September 3, 1903, we wish to report as follows: The small peritoneal masses are tubercles. They are composed of epithelial cells and lymphocytes in about equal numbers. There are very few polymorphonuclear leucocytes. There is a distinct disposition to capsule formation around each nodule. A node, less than the size of a pea, is composed of many nodules. There are few giant cells and only a small amount of necrosis. There is an indistinct band of fibers underlying the tubercles. Some of the nodules are partially below this and some are wholly below it, but generally speaking they are above it. In the tissue below this band are the fibers underlying the tubercles. Between these bands of perpendicular fibers, are strings of cells that split them up. These represent extension of the infection (tubercular) to the underlying tissue."

Further report on the same specimen: "Section 24560—1 is through a dilated portion of a Fallopian tube. Seen with the unaided eye, peritoneal tubercles appear. In addition there is a somewhat diffuse thickening of the peritoneum. The muscular tunic is not very prominent. The lining coats look necrotic.

"Under magnification: The peritoneum is diffusely thickened. Above the general peritoneal level, nodules rise here and there. In the peritoneum there are islands of large vesicular nucleated round cells. Generally these are in the perivascular spaces of the smaller blood-vessels. There are no giant cells. None of the cells show necrosis in the protoplasm. There is a slight leucocytic infiltration. The perivascular spaces of the larger blood-vessels are not so affected. The same process, though to a lesser extent, is seen in the muscle tunic.

"In some places, near the muscle tunic, a few slightly dilated glands lined by low columnar or cubical epithelium can be demonstrated. These are usually partly filled with polymorphonuclear leucocytes. Nowhere else do we find any glands or epithelium. The tissue of this region is necrotic tubercular tissue with moderate leucocytic infiltration. There is little or no tendency to organization in this area. There is some evidence in these sections of infection travelling from the Fallopian tube mucosa to the peritoneum.

"24560—2 is through abscess. Our sections show a typical tubercle tissue, for example, such as is described under 24560—3. There are giant cells, productive connective tissue, inflammation, focal necrosis, etc.

"24560—3. This is a section through the ovarian abscess wall. Naked eye examination shows a Fallopian tube and its fimbriated extremity. The fimbriæ do not seem to be tubercular. There is no naked eye appearance of tubercle in the adjacent tube. There are a few small cysts similar to those that form in the tubes of Rosenmüller. Near the tube is an abscess wall. This seems to have an outer fibrous wall and a lining thrown into yellow folds or rows.

"Microscopic examination of the wall shows: Externally there is a banded wall with fibers that run circularly. These fibers are open in arrangement, but there are no islands or strands of cells to suggest that the infection was traversing the wall. External is a layer of tubercular granulation tissue. The yellow rows or ridges are due to piling up of this tissue. This tubercle tissue shows a moderate number of giant cells. The ordinary cells are mostly fibroblasts in the spindle cell stage or even a little older than spindles. There are a moderate number of epithelioid cells. The proportion of reticulum is large. There is but little evidence of necrosis as a general proposition, though here and there are large necrotic islands. This is quite a vascular tubercle tissue.

"We find no tissue elements by which we can verify microscopically the nature of the lost tissue, *i.e.*, there are no specific ovarian elements."

SECTION VIII. TUBERCULOSIS OF THE PERITONEUM.

Frequency.—In 13,422 necropsies, the peritoneum was tuberculous in 284 (Grawitz, Brunn).

Age.—While the table collected by Osler shows that most cases occur between 20 and 30 years of age, it may be found at any period. During childhood it is somewhat frequent. Rotch found that in the Childrens' Hospital of Boston, the disease was extremely rare in the first few months, the youngest patient being 14 months old. After the first year and a half of life the disease was found to become frequent and was most common between the ages of two and four, after which it occurred occasionally only.

Sex.—The disease is more common in the female; according to Nothnagel, 90 per cent. of the reported cases are in females. In 322 cases reported by König and others, 251 were in women (78 per cent.), and only 71 in men (22 per cent.).

History.—A tuberculous family, or one of some antecedent lesion, is very noticeable. Thus, in Rotch's cases there was a tuberculous family history in 30 per cent. Other authors give a much higher percentage, for example, Brunn, 55 per cent.; Fuller, 60 per cent.; Desplans, 71 per cent.

Pathogeny and Etiology.—The cause is invariably from tubercle bacilli gaining access to the peritoneal cavity. The route, however, by which they reach the peritoneum is frequently difficult or impossible to determine and evidently is not the same for all cases. Dieulafoy believes the most frequent source is the intestine, where they have been introduced in sputum or food (infected milk or meat). The bacilli may attack the intestine first and the peritoneum next, or, absorbed by the superficial lymphatics of the intestinal mucosa, may attack the peritoneum primarily. This latter hypothesis seems to be confirmed by the experience of Wesner and Cornil. Again, Dobroklonsky has shown that the bacilli are capable of passing through the walls of the intestine without a primary lesion of the bowel and thus reaching the peritoneum without leaving any trace of trouble at the atrium of invasion, as it does in the pharynx, to infect the cervical glands.

Other sources are the blood current (which is more common in children, though infrequent at any age), the lymph current especially from the mesenteric glands, the pleura, the stump of the umbilical cord (Veit), and the genito-urinary tract. As a general rule, it may be stated that in males the most common source of infection is the intestine; next, the genito-urinary tract; and in females, the genital tract, especially the tubes. A number of cases of tuberculosis of the uterus and cervix have not extended to the tubes and vice versa, as Von Hauschka's cases.

Any previous condition which tends to weaken the resistance of the peritoneum will act as a predisposing cause, for example, acute peritonitis, pelvic hematocoele, enteric fever, and especially the puerperium. Kelly believes the influence of pregnancy and parturition has not been sufficiently recognized.

From a pathologic standpoint, four varieties are manifest:

1. Disseminated, exudative, miliary, non-confluent, serous (ascitic) variety.
2. Nodular, ulcerative, or perforative variety; the least frequent variety.
3. Adhesive, fibro-plastic, cystic, partition or obliteration variety.
4. Suppurative, circumscribed or general mixed infection.

We have observed clinically the relation of tuberculosis of the tube and tuberculosis of the peritoneum. The tube has been almost uniformly involved in the tuberculous process where its fimbriated end was free from adhesions in a tuberculous peritoneum. So common was the condition, clinically, that I believed the tubes were infected from the peritoneum, and to demonstrate this route of infection, the experiments on the monkeys, reported above, were undertaken, with the results therein given.

Recently, I had a striking case of tuberculosis of the peritoneum, from a primary tuberculosis of the appendix, with multiple miliary deposits and few adhesions, a considerable quantity of fluid in the pelvis and non-adherent fimbriæ. The tubes were not enlarged and there was no tuberculosis of the tubal mucosa. This case also illustrates the similarity in the clinical history, between tuberculous peritonitis from a primary lesion of the appendix, and a primary disease of the tubes.

Mrs. N. J. M. Clare, Iowa. *Æt.* 27 years. Duration of illness, eight months and four days. Admitted to Mercy Hospital September 24, 1903.

Family History.—Mother died of carcinoma. One sister died of tuberculosis.

Previous History.—Only the diseases of childhood, with no recognizable sequelæ, except migraine, which she has had since childhood.

December 28, 1902, patient was suddenly attacked with pain in the abdomen, which was located at the umbilicus. It was intensely severe, requiring a hypodermic of morphine for relief. Four hours after onset patient was nauseated and vomited. The following day the pain gradually settled into the right iliac region. It was then accompanied by marked tenderness. The pain lasted for four days and gradually subsided. The right thigh was flexed on the abdomen and jarring of the bed produced pain. The severity of the symptoms gradually subsided but the sensitiveness to pressure in the lower half of the abdomen and particularly in the right iliac fossa has continued from that time. There was no temperature in this attack. (This is questionable.)

Second attack April 17, 1903. Similar to the first in every particular, except of longer duration.

Had a third attack June 26, 1903. The first attack was very severe and kept her in bed three days; the second, four days; and the third, nine days. From June 26 to the present time, the patient has been unable to do her housework; has felt languid; lost some in

weight. There is constant soreness in the lower portion of the abdomen.

Menstruation began at 16; occurred about every 30 days; occasionally intervals would be shortened to 27 days and lasted from three to four days. This was not materially changed in the last year. There is no leucorrhea and never has been. Married three years; no pregnancies and no history of pelvic infection.

Present Condition.—Patient is poorly nourished; has a sallow hectic flush on cheek; the abdomen is distended; no evidence of fluid; it is "doughy" in its response to pressure; in the lower right it is semi-resonant; in the region of the appendix a small induration can be detected. This is particularly sensitive.

Vaginal examination shows an infiltration of the Douglas pouch. Uterus is movable though not free. Tubes are not enlarged. The entire pelvic area is hypersensitive. No examination was made of the vaginal secretions either microscopic or inoculation as the patient came to the hospital only 48 hours before operation. Urinary findings negative.

Diagnosis.—Recurrent and chronic appendicitis with chronic pelvic peritonitis.

Operation.—September 27, 1903. Section. Incision through the middle of the right rectus muscle. The peritoneum was chronically congested and very vascular. Soft cobweb adhesions united the intestines to the parietal peritoneum and to neighboring viscera. The caput coli was free; the appendix was as large as adult index finger. At its base could be seen a small seropurulent accumulation of a couple of drachms. It was encapsulated by a transparent membrane, which ruptured on touching. The floor and mucoid material escaped. From this sac there was direct communication into the lumen of the appendix. The appendix, on the intestinal side of this opening was occluded by a granulation mass. A tubercular ulcer amputated the appendix for about two-thirds of its circumference. The pelvic peritoneum had the same waxy like adhesions and friable fixation of all of the tissues. (The agglutinations are more like "slimy webs" than adhesions but the surface of the peritoneum has lost its gloss and is velvety in place of glistening.) The fimbriae of both tubes were free and there was no enlargement or thickening of the tubes. The peritoneal coating of the tubes and ovaries was studded with miliary tubercles. No ulceration of the peritoneum and no organic adhesions in position. The uterus was enlarged, but in normal situation. The appendix was removed from the wall of the caput coli. There

no thickening of the cecal mucosa. Tubes and ovaries allowed to remain. Abdomen closed.

The left iliac fossa was less involved than the right and the intestines had a smaller number of tubercles, as the distance from the caput coli increased. The jejunum had no tubercles; the omentum also was not involved. It is evident from the pathologic findings that there had been ruptures of the thin friable membrane, which encapsulated the tubercular débris at the base of the appendix, and that the repeated attacks of peritonitis were due to the escape of this material into the free peritoneal cavity. This also accounted for the hypersensitiveness and thickness of the pelvic peritoneum and, notwithstanding the severe infection of the pelvic peritoneum and the free fimbriated ends of the tubes neither the fimbriæ nor the tubes were infected by the tuberculous process; supporting the results of the experiments on the monkey, showing that if the tubes are infected at all from the peritoneum, there is some additional condition necessary, other than tuberculous peritonitis with free fimbriæ.

Post-Operative Diagnosis.—Primary tuberculous appendicitis; perforation (repeated); tuberculous peritonitis. Convalescence uneventful.

Microscopic examination of the appendix revealed giant cells, epithelioid infiltration and tubercle bacilli; classic, tuberculous, perforative abscess of the appendix.

The experiments on the monkeys and this case show that tuberculosis can exist in the pelvic peritoneum without the tubes becoming tuberculous.

Symptoms and Diagnosis.—In the acute cases, there is marked pain in the pelvis and lower abdomen, radiating toward the lumbar region; diarrhea (or constipation); nausea and vomiting. The local examination is painful; the vagina is hot; the cul-de-sac is filled; there is a general doughy feeling, but no appreciable tumor; there is little or no disturbance of the menstrual function. The temperature is elevated. According to Galvani, of Athens, the fever is intermittent, especially elevated in the evening, with morning sweats.

In the chronic form on the contrary the temperature is frequently subnormal, 95.5° to 97° F. (Osler). Menstrual disturbances are very marked, pain is present at the menstrual epoch, the abdomen becomes enlarged and tender, especially on palpation over the iliac fossæ. As the disease progresses, the patients become pale, anemic and emaciated. The abdomen is very prominent,

due partly to distension of the intestines with edema and thickening of its wall, and partly to accumulation of fluid. Bouilly remarks that the abdomen does not present the usual characteristics of ascites, flat in the middle and enlarged at the sides. Instead, it resembles an ovarian cyst, projecting in front and depressed at the sides hence erroneous diagnoses are very likely. Moreover, the quantity of fluid is not always the same, even the patients themselves notice variations in size. The same author points out an important fact, namely, that the quantity of fluid present is no indication of the extent of the disease. As much as ten, twelve, or even more liters may be found in cases where the tuberculous lesions are limited to the adnexæ and true pelvis.

Lohlein, giving an account of his experience at the Gynecologic Clinic at Giessen, states that cases with easily recognizable ascites are most commonly found in the medical wards. The majority of his cases were sent in by the family physician with a diagnosis of tumor or ovarian cyst. He adds that the ascites is detected by palpation and by percussion and will be found especially between the right and left hypogastric regions. In about one half of his cases, he found a distinctly flat sound from the median line to the left, even into the left iliac fossa. Toward the right however, the sound gradually became higher in pitch.

In cases also in which collections of fluid in the abdomen were walled off, the left side was distinctly duller than the right.

The explanation of this is found in the fact first pointed out by Thomayer that the diseased mesentery is drawn towards its root, hence pulling the bowels on the left to the median line and increasing the intestinal bulk on the right side, while the left side of the cavity becomes filled with the fluid exudate. (This explanation would not hold good in our cases as the mesentery was so rarely infiltrated.) Changes in the patient's position have little or no effect on the dullness.

Considerable information is afforded by rectal examination, and by the discovery of nodular masses and thickenings of the omentum.

Plaque-like thickenings of the deeper parts of the abdominal parietes are emphasized by Edebohls as a sign of the greatest value in the early diagnosis of peritoneal tuberculosis without ascites. "They impart to the examining fingers," he says, "the sensation as if the peritoneal surface were occupied by urticaria wheals of various sizes." He has met them varying in size from one to eight centimeters in diameter. They may be quite numerous

or but two or three found scattered over the anterior and lateral walls. By examination during the course of the operation, this author is satisfied that these plaques are due to hyperemia and swelling of the subperitoneal connective tissue. The peritoneum was frequently found unchanged and not the seat of tubercles at the site of the induration. Indeed, the sign may be especially well-marked in the very beginning of the disease, where only a few scattered tubercles are present. After the disease has progressed to universal and uniform thickening of the peritoneum, the sign will be less available. Edebohls therefore considers it of especial value in the very early stages and when it can be clearly distinguished in parts of the abdominal wall not overlying a solid viscus, he regards it as almost, if not quite, pathognomonic. The only other disease he continues, in which it might occur is disseminated secondary carcinosis. This, however, should present no difficulty, as it could only occur toward the end of carcinosis, while in tuberculosis it is an early manifestation.

Edebohls believes enlargement of the spleen in connection with other symptoms is of some importance, as he found it in one half of his cases. He also noticed a deep brown discoloration of the entire integument which is alluded to by Osler also, who tells us that in his case the adrenals were not affected.

The symptoms and physical signs in tuberculosis of the peritoneum vary greatly in the three distinct types of the disease.

I. The disseminated, exudative, non-confluent, serous variety. In this variety with involvement of the tubes, the attacks resemble recurrent peritonitis of appendiceal origin, except the field of activity of the process is the pelvis and not the right iliac fossa; the attacks in this variety come with a pronounced periodicity and not necessarily associated with menstruation; they are due to the periodic discharge of tubercular material from the tubes as we demonstrated repeatedly in the operations during the attack. In this, the most common variety, the order of symptoms is, first, mild temperature; second, pain (principally in the pelvis) with nausea and vomiting; third, local tenderness over lower half of abdomen; fourth, great sensitiveness in the fornices; fifth, induration of the tubes; sixth, infiltration and thickening of the utero-rectal fold, by proctal examination (this is of special significance, though it is also present in pelvic peritonitis due to rupture of the appendix into the pelvic fossa); seventh, temperature on second or third day (from 101° to 103° F.); eighth, there is usually flatness in the lower portion of the abdomen and bulging of the cul-de-sac, due

to the effusion, the quantity of which varies from a few ounces to many gallons; ninth, pronounced leucocytosis; in one the count was 18,400.

The peritoneum in these cases presents a congested surface, here and there gray fibrous plaques, fresh deposits of miliary tubercles most numerous near the mouth of the tubes are seen and not infrequently fresh cheesy material is escaping or easily pressed out of the tuberculous tube. The attack is the peritoneal response or inflammation caused by the tubercular eruption or expulsion of *débris* from the tubes.

In each recurrence the symptoms appear in about the same order and continue the same period of time, eight to fourteen days. The remission is not complete as it is after an acute attack of appendicitis; there is continued hypersensitiveness of the pelvic peritoneum. The distinctly intermittent attacks do not occur in the nodular, ulcerative or perforative varieties, in the adhesive fibroplastic nor in the mixed infection types. The "doughy" condition of the abdominal wall is not present in this variety; the abdomen has the same fixed resistance as in the other acute types of peritoneal infection. It requires considerable experience to make the differential diagnosis between this recurrent type of tubercular peritonitis and recurrent appendicitis, but when the patients are seen in the acute attack and the pictures are once clearly recognized there is less difficulty in making the differential diagnosis.

2. The nodular, ulcerative or perforative variety. This may be described in words thus: The whole force or destruction of the process is concentrated into small areas and in these areas not only the peritoneal coat but the deeper structures, as the intestinal wall, the mesentery, uterus or ovaries are destroyed or changed into caseous masses surrounded by dense connective tissue barriers and adhesions. The symptom-complex of this variety takes no definite form; the pains are irregular, there is no periodicity to the attacks, the fever usually does not exceed one or two degrees, there is a general malaise and occasional attacks of pain or cramps of an indefinite type, with local hypersensitiveness and nodules or bands of increased resistance. When the adhesions occlude the intestine or impair the transmission of its contents there may be recurrent attacks of colic which are not associated with temperature or manifestations of peritoneal inflammation. The circumscribed nodule, circumscribed sensitiveness or area of dulness are the only physical manifestations of the disease. The tubes are usually closed or fixed at their fimbriated ends to the neighboring

viscera. The diagnosis in this class of cases cannot be made definitely except by exploratory section.

3. The adhesive, fibro-plastic, cystic, circumscribed abscess, partition or obliteration variety. This variety of tuberculous peritonitis manifests itself in the destruction of the endothelial lining of the peritoneum and the production of connective tissue products of varying degrees of density from the soft, spider-web or fuzz-like agglutination projections, a non-glistening, edematous, inflamed peritoneum, to the firm, white, fibrous inelastic, highly organized tissue which has even a greater resistance than the peritoneum itself. In this process circumscribed areas of the peritoneum retain their identity and react to the process in the production of a hypersecretion producing the circumscribed cysts which are so characteristic of this type of the disease. Occasionally these cysts receive infective flora most likely from the intestine and produce circumscribed areas of suppuration. In this variety, too, we have the sealed ends of the tube or the fimbriated end communicating with a circumscribed cyst or pus accumulation. The intestinal wall and parietal peritoneum are usually very much thickened and inelastic, resembling wet leather. It is this pathologic change in the consistency and in the resistance of the intestinal wall and peritoneum that gives rise to the "doughy" response of the abdominal wall to external pressure. The adhesions may exist and obliterate the lower portion of the peritoneal cavity only, or the agglutination may extend and involve the entire peritoneum to the stomach so that no free peritoneal cavity remains. (Veit points out that the fact of adhesions being very numerous and extensive in healing tuberculosis makes it probable that this form succeeds the ascitic form; however, he adds, it is seen in patients who have never presented any evidences of ascites.) The symptomatic manifestations of this type of disease are those of a continued inflammatory process with a minimum septic intoxication, *i.e.*, the pain and hypersensitiveness of the peritoneum are continuous with exacerbations without an elevation of temperature above 101° , except when circumscribed mixed infection occurs; then the night sweats and evening elevation of temperature become conspicuous symptoms. The leucocytosis is never pronounced; the emaciation is progressive but not rapid. The physical signs are in consonance with the varied pathologic changes in the peritoneum above mentioned. In the cobweb variety we have slight vaulting of the abdominal wall, uniform decrease in the resonance of the percussion note, an absence of borborygmus and the classic

"doughy" elasticity of the wall to pressure. The uterus is somewhat fixed; the fornices increased in resistance, but not infiltrated; the recto-uterine peritoneal fold is very sensitive to pressure and the tubes are occasionally palpable as irregular nodular ropes.

In the circumscribed, cystic form the quantity of fluid in the cyst or cysts may represent but a few ounces and rarely exceeds a pint. They are usually fixed and are frequently mistaken, when deep in the pelvis, for cysts in the broad ligament. They are often irregular in outline and occasionally involve a segment or even half of the abdominal cavity with a marked ridge or partition of adhesion extending obliquely or transversely across the peritoneal cavity.

The fluid does not change (position) its location with change of the body's position. The inflammatory reflex manifestations and mode of onset are not so pronounced as with torsion of the pedicle of an ovarian cyst. The clinical course, however, resembles that of combined tubal infection and ovarian cyst with pericystic inflammation. In the latter pathogenesis we frequently have multiple inflammatory cysts resembling closely those of the tubercular variety, but the pathologic change in the peritoneum differs materially.

4. Tubercular peritonitis with mixed infection. While we class this as a separate variety, in reality it is any of the three preceding pathologic conditions to which the additional influence and effect of other infective flora have been added and in which the virulence of infection plays a very important rôle both in the pathologic changes and symptomatic manifestations. When secondary mixed infection takes place, the tendency at once is to circumscription of the process. If at the time of secondary infection the tubes only are involved, the fimbriated ends immediately become closed or fixed to a neighboring structure or terminate in a circumscribed abscess. I have never seen a case of mixed infection of the tube with free fimbriated extremity, and only in very exceptional cases of the sero-exudative type have I found the end of the tube closed. So uniform is this condition that I consider that when the fimbriated end of the tube is sealed there is or has been a mixed infection. Occasionally we find a mixed infection in one tube, with its end closed, while the other tube has a simple tuberculosis with an ectropion of the mucosa and a free fimbriated end. In tuberculous mixed infection of the tube and small circumscribed abscess, we have exacerbations of the inflammatory process mimicking the exacerbations of specific pyosalpinx; the former has a more pronounced periodicity in manifestation and there is less inflammatory

reaction of the peritoneum. The physical findings are practically the same. When a large tuberculous effusion or cyst receives a mixed infection and the lower half of the abdomen becomes similarly involved, we have an empyema of the peritoneum with a distinct partition. In one case of this kind, the intestines were all displaced by a pathologic diaphragm that had formed on a level with the umbilicus and when opened was an enormous pyoperitoneum without intestines as illustrated by case of Mrs. L. (see below). If the type of infection be virulent these suppurations are associated with chills, pronounced elevation of temperature, hectic diarrhea and rapid emaciation. The leucocytosis is not so marked as in the average acute peritonitis. The anamnesis and the physical and clinical manifestations before the inception of the mixed infection are of great value in making the differential diagnosis between this and other varieties of peritonitis.

There is occasionally a necrosis of the wall of the abscess and the contents are emptied into the intestine, bladder, vagina, ureter or upon the surface of the body. This adds materially to the gravity and the danger to the life of the patient. The mixed infection variety requires special consideration in its surgical management.

Mrs. L. *Æt.* 22. Admitted to Mercy Hospital July 6, 1896.

Family History.—Negative.

Personal History.—Has been married one year. As a girl, weighed 140 pounds. One year ago had a slight attack of pleurisy. Does not know that there was effusion in the chest. No cough preceding nor following it.

About four months ago patient began to complain of lassitude and anorexia, with enlargement of the abdomen. There was no nausea, nor vomiting. Shortly after the appearance of the enlargement, she began to have fever, with profuse sweatings; appetite became less and less; she had decided afternoon hectic. Case was pronounced typhoid fever.

When patient entered the hospital temperature was 102, pulse 136. Complains of dyspnea and pain through abdomen. This pain has been present to a mild degree for four weeks. Is relieved somewhat by bowel movements. Lungs negative.

Physical Examination reveals a flatness over the lower abdomen, from a level with the umbilicus. Fluid does not change with change in position.

Pelvic Examination reveals thickening and fixation of the Douglas' pouch; impaired mobility of the uterus; hypersensitive-

ness of the recto-uterine peritoneal fold; nodules in both fornices. The masses could not be outlined by bimanual palpation on account of fluid in the abdomen.

Operation.—July 7. Median incision. An enormous pyoperitoneum, filling the entire lower half of the abdomen to a level with the umbilicus. No intestines were to be seen in this field. The omentum was covered with thick fibrinous exudate, making a distinct diaphragm, walling off the upper from the lower portion. The tubes were buried in a mass of adhesions. The fimbriated ends were closed. Both were removed. The cavity was mopped out and iodoform gauze and tube drain inserted. Tube and gauze were removed on fourth day.

After the operation, the temperature dropped to 99° and remained there for three days, and the pulse to 110. Then, gradually, the pulse and temperature began to rise and each evening the temperature reached 102 until the eleventh day, when it reached 103. The pulse gradually increased in frequency to 110-120. Patient left the hospital July 26, with the wound discharging, the hectic, anorexia, night sweats, and emaciation continuing. The temperature increased to 104 and I learned that the patient died a few weeks after leaving the hospital.

I believe in this case, where the disease was so thoroughly circumscribed to the peritoneum, that if I had followed the plan of the present time, namely, emptying and reclosing the abdomen, that the temperature would have remained down, as it did for the first three days, and that the patient would have continued to recovery. It was the secondary mixed infection, the result of the drainage, which I believe hastened the final unfavorable result.

Prognosis may be appropriately introduced with some quotations from the earlier writers:

Wunderlich (1856) did not observe a cure.

Bamberger (1864), who divided peritonitis into two classes (1) peritonitis from tuberculosis and (2) that from the female genitalia, says even when the local process is healed, death ultimately occurs from tuberculosis of other organs.

Bauer (1875) considered the condition absolutely fatal.

Jurgensen (1888) says recovery is rare and relative only.

Eichhorst (1891) believed the prognosis very bad. In his opinion recovery is infrequent and even then is only relative and uncertain.

Strümpell (1892) believed the disease could progress to a fatal termination in a few weeks or months. Occasionally there is a

pronounced remission of symptoms even to apparent cure. As a matter of fact, the disease reappears as an acute tuberculosis of other organs.

This type of remission was forcefully illustrated in the following case:

Miss H., æt. 16, seen in consultation April 9, 1901, suffering from a severe acute attack of tuberculous peritonitis, with considerable abdominal effusion, local nodules of excessive resistance and tenderness. Infiltration and thickening of the pelvic peritoneum shown by proctæal examination; morning temperature 101° , evening 103° ; sweats and hectic; great depression. These symptoms had been present with increasing severity for ten days. Operation was advised and declined. During the three weeks following the patient made great improvement, the vomiting ceased, the pain, temperature and effusion disappeared; patient's general appearance was materially improved and the surgeon was severely criticised for suggesting the operation. Five weeks from the onset of the attack the patient began to complain of severe headache, nausea, and the temperature suddenly rose to 104° . In twelve hours she was delirious and in seventeen unconscious. She remained in that state until she died at the end of the third day, with all of the manifestations of a tuberculous meningitis with effusion.

Vierordt (1894) reported a case of spontaneous cure as a curiosity.

Henoch (1897) says medical treatment is useless and was not very sanguine as to operation.

Pribram (1898) mentions some spontaneous cures.

Kussmaul (1899) witnessed complete recovery in a case with enormous ascites and several recoveries in cases of milder type.

In considering prognosis the possibility of spontaneous cure must be taken into account. A cure so complete that not the least vestige of the original disease may be left. Several such are now recorded, Alterthum alone mentioning three. Veit looks upon cases of peritonitis with ascites and granular dissemination over the peritoneum as undergoing healing. Gatti, in his experiments on animals found that the fibrous form of tuberculosis healed readily, while the caseous form never healed. As a general proposition it may be stated that the more acute the case, the better the prognosis. The prognosis is materially influenced by the modern methods of aggressive surgery to which attention will now be directed.

TREATMENT.

The surgical or medical treatment of tuberculosis of the peritoneum involves four propositions: First, to remove or shut off the source of supply to the peritoneum of new tubercular débris; second, to remove the products of the infective process from the peritoneum; third, to increase the tissue proliferation for the encapsulation of the foci already present; and, fourth, to avoid mixed infection. All treatments that have availed, as recorded in the history of the therapeutics of this disease, have succeeded on these lines, as may readily be seen from the following abstracts:

Logically, says Gorovitz, treatment should fill two indications: (1) Cure the peritoneal lesion, and (2) above all, suppress the tubal lesion, which was its starting point. The operative treatment dates back to 1862, when Spencer Wells made a laparotomy in a case of tuberculous peritonitis, and found, to his great astonishment, that his patient not only survived the operation but was cured. Laparotomy was formally advised as a therapeutic measure by König in 1884. Five years later, in 1889, this author was able to collect 131 cases from his own practice and from the literature. After a study of these, he announced that the most frequent method was a simple abdominal incision with or without evacuation of the fluid.

The operation itself, as regards technic and dangers, is the same as a simple exploratory incision, according to Schwartz. It is done in three stages—opening the abdomen, under the most rigid asepsis, evacuation of the ascitic fluid and closure of the wound. The application of antiseptics—iodoform, etc., is of no additional benefit, and the majority of operators advise tubular rather than gauze drainage. Care is necessary in incising the abdominal wall as the peritoneum is approached, on account of the possibility of wounding the intestines which may be adherent to the wall.

The tendency of surgeons at present is to operate later and later, after the pain and discomfort from the ascites and adhesions have become so marked that relief is imperative. Too early intervention is unwise since the tuberculous process may be still in process of evolution.

The operation by the vagina, advocated by Condamin and Lohlein and his pupils, is not in favor at present. The advantages claimed for it are: (1) The dangers of infection are reduced to the minimum; (2) there is no liability of a ventral hernia; (3) shock is lessened, owing to there being less occasion for handling the bowels; and, (4) recovery is quicker; but the statistics of Lohlein

support the abdominal route with 64.7 per cent. recoveries against 57.1 per cent. recoveries by the vaginal route. Baumgart, one of Lohlein's assistants, gives some figures, which, while not extensive enough to afford any conclusive evidence, show there is but little difference between the abdominal and vaginal routes. Thus, of twenty-four laparotomies, eleven healed (64.7 per cent.); of seven vaginal operations, four healed (57.1 per cent.).

Healing has also occurred after simple puncture; and after evacuation of the fluid and injection of air, advocated by Mosetig-Moorhof. Koster has had excellent results in tuberculosis of the anterior chamber of the eye by the puncture method. In one of Baumgart's cases, though, puncture was tried twice unsuccessfully; on one occasion 4,000 cubic centimeters were evacuated, and 6,400 on another. Laparotomy was finally performed on account of recurrence and the patient was well five years afterward.

A second laparotomy may be called for and in one case (that of D'Urso) no less than four were performed before healing eventuated.

To what is the beneficial effect of the operation to be attributed? There are several theories; the latest ones, and those in accord with the present knowledge of bacteriology are as follows:

Gatti believes the cure is due to a post-operative serous effusion and "aqueous degeneration, so to speak, which has a bactericidal effect, dissolving the epithelioid cells and reviving the lymphocytes.

Hildebrandt's opinion is very similar; he considers the cure to be caused by a marked post-operative hyperemia.

Nannotti and Bacchiocci from their experimental work also conclude healing arises from the inflammatory reaction of the peritoneum with increase in the resorptive powers of the serosa and consequent fibrous degeneration of the tubercles.

Von Wickel claims the laparotomy heals by evacuating a toxic principle.

Veit amends this by adding that it has a still more important effect—to determine the arrival of a new quantity of antitoxin. If, he says, we evacuate the effused fluid suddenly and completely a new effusion of normal serum occurs immediately, which is possessed of bactericidal power in the highest degree. Hence the struggle against the microbes will have the best chance of succeeding. If, however, fresh bacilli continue to penetrate into the peritoneum, or a tuberculous focus elsewhere in the body partly

neutralizes this antitoxic power of the serum, it is evident healing will not result.

To the objection that the antitoxin serum should annihilate the bacilli in all tuberculous foci, Veit makes the following answer: The presence of bacteria in the tissues produces an antitoxin in the serum which acts on all bacteria that enter the body after its production. Those bacteria, however, which were the cause of its production are not affected; they are either protected by their toxins or are surrounded by a neutral zone, through which the antitoxin cannot act. Failures to cure in the early stages by a premature operation are due, says Veit, to the fact that the serum has not acquired sufficient antitoxic power. These considerations of Veit are corroborated by Arcangeli, who found that the older the fluid, the more pronounced its antitoxic power.

We now come to the question of vital importance—In what proportion of cases of tuberculous peritonitis may we expect a cure after operation?

As it might be expected, from the authors quoted in the section on prognosis, some observers prefer medicinal treatment. Hildebrandt, for example, claims that laparotomy only encourages the tendency of the tubercles to heal but is incapable of causing this by itself. The advocates of medicinal measures advise early systemic treatment as soon as the diagnosis is established and rely on the usual anti-tuberculous remedies—rest, exhibition of creosote, iodine, and the like.

The most recent advocate of conservative treatment is Borchgrevink, who gives us his experience in two almost equal series of cases, one with laparotomy, the other without. Of twenty-two cases operated on, fourteen (63.6 per cent.) recovered, and eight died. Of seventeen cases treated conservatively, fourteen recovered (82.3 per cent.). As a result of his observations, Borchgrevink concludes that though the operation may have done good, it was doubtful, to say the least.

Against these conservative opinions is the overwhelming evidence of numerous operators, and the value of operative intervention can no longer be said to be in question. A distinction must be made however, between anatomic healing and clinical healing. The former is possible but apparently unusual. As regards clinical healing, it is evidently unfair to report "cures" a few weeks or months after the operation. As in carcinoma, a time limit must be set and Von Winckel sets this at five years, which is evidently too long a period.

A number of collections of statistics have been published, showing the beneficial effects of the operation; among these may be cited:

Margarucci; 250 laparotomies in Italy, with 85 per cent. recoveries.

Von Krencki; 226 laparotomies. Of the ascitic cases, 71.5 per cent. recovered; of the adhesive, 61.6 per cent., and of the encysted, 75 per cent.

Thomas; 346 laparotomies. Of the ascitic variety, 73 per cent. recovered; of the encysted, 57 per cent., and of the dry adhesive, 57 per cent. likewise.

Roersch; 358 laparotomies with 70 per cent. of recoveries.

Adossides; 405 laparotomies with 75 per cent. of recoveries.

Hall, Dr. Rufus B. (Cincinnati), reports 110 sections for tuberculosis of the peritoneum; four were in the male; all from tuberculosis of the appendix; 106 on females, 8 due to tuberculosis of the appendix and 98 to other causes. Of these, 94 are symptomatically well; one died the third day following the operation; six died of tuberculosis in from 14 months to three years after the operation; one died three and one-half years after the operation and another, four and a half years after. Two cases have now advanced pulmonary tuberculosis and will probably die. These are striking results in favor of operative treatment.

The figures from the Königsberg Klinik give 58.8 per cent. of recoveries, and Frank, from observations at the Heidelberg Klinik, places the percentage of recoveries at from 40 to 50.

While a rapid recurrence of the ascites is an unfavorable prognostic omen, a second laparotomy has been done in over 70 cases, and in one, as stated before, four times.

In this connection, Sippel's case is both interesting and instructive. At a laparotomy, the abdominal end of the tube and the peritoneum were found to be studded with tubercles. Healing apparently resulted, yet seven months later pain reappeared on the left side and a second laparotomy disclosed the same condition of affairs on this side, the first focus, on the right side, having healed completely.

Treatment of Tubercular Peritonitis.

From the comments by the various writers, it is clearly recognized that there is a wide divergence of opinion as to the results obtained by medical and surgical intervention and by varieties of these. This difference of opinion, evidently based upon results

of accurate observations and founded on facts, is due to the lack of classification or recognition of the different pathologic processes that have taken place or are taking place in the peritoneum. A few of the writers have based the statistics of their results on clearly classified pathologic conditions of the peritoneum, and these statistics are of the greatest value. No general surgeon would expect a restoration of the knee-joint, *ad integrum*, where the cartilage and synovial membrane had been destroyed, no matter whether the treatment was a local application, a dose of creosote, a powdering with iodoform, an exposure to air or to the X-ray. And still, with exactly the same degree of destruction of the peritoneum, patients are expected to recover by any of the varieties of treatment mentioned.

In discussing the proposition of prognosis or results by any type of treatment, a distinct classification of the pathologic conditions must be mentioned, if the author's opinion or statistics are to carry weight. The treatments must be varied to meet indications for overcoming the pathologic conditions in the individual case. In expressing ourselves on the subject of treatment, we shall endeavor to keep clearly in mind the four prime and typical pathologic conditions described above, notwithstanding we recognize that these often merge and the treatment must be adapted to the predominating pathologic phenomenon.

Treatment of the Disseminated, Serous Variety.

Treatment of disseminated, miliary, exudative, non-confluent, serous peritonitis, which in the great majority of cases is associated with or due to tuberculosis of the tube. The fimbriated end of the tube is open; it is constantly ejecting into the peritoneum the tubercular debris and adding additional insult to the peritoneal surface. The medical treatment of this class gives poor results, as in thousands of laparotomies it is the rarest exception to find a healed tuberculosis of the peritoneum where a mixed infection and closure of the tube has not occurred. Furthermore, it is a well-recognized pathologic fact that tuberculosis of the mucous surface of the tube, like tuberculosis of the mucous surface of the intestine has little tendency to heal or encapsulate, and without the healing of the mucous membrane of the tube there is no cure of the peritoneal disease as long as the fimbriated end remains patulous. Abdominal section *per se* without the removal of the tubes and without the induction of an inflammatory process, which would produce the occlusion of the

tubes, would be as futile and useless as internal medication, or creosote. The prime indication in this class of cases is to remove the diseased tubes on the uterine side of its primary caseous nodule, which is usually about five-eighths of an inch from the uterine cornu. When this is accomplished and the abdomen closed, if there be no pus infection, the case will recover whether it be drained, iodoformed, solarized or simply closed up without any of the so-called life-saving touches. I am convinced, from the observation of the process of repair of tuberculosis, not alone in the peritoneum, that it is important to have an inflammatory reaction following laparotomy if the case is to make a rapid and satisfactory recovery. This post-section reaction I believe is due to a fermentation or decomposition of the fluid or secretion remaining within the abdomen. This does not, to my mind, produce an antitoxin which destroys the bacilli, but it causes what the iodoform-formalin emulsion injection into the knee-joint causes—a chemical irritation and inflammatory reaction in the tissue. If the peritoneum be inspected three or four days after the laparotomy, as I have had opportunity to do on more than one occasion, it will be found intensely congested, its vascularity greatly increased, its gloss almost or quite abolished, and the fluid not fresh, clear serum, but cloudy or sero-purulent, showing the most active proliferation. It is this tissue proliferation which overwhelms and encapsulates the tubercular foci on the surface of the peritoneum. Fluids removed at this stage showed equal or greater toxicity than fluids removed preceding the operation, but the resistance of the tissue as manifested in the so-called inflammatory reaction was increased sufficiently to overcome the destructive effect of the micro-organisms, *i. e.*, the inflammation is not the disease, but the manifestation of resistance offered by the tissues to the invading pathogenic flora. The phenomena of inflammation are the outward manifestations of tissue resistance, are life-saving, should be encouraged, except when the local leucocytosis, edema and proliferation is such as to strangle or occlude the circulation. Celiotomy attains its best results in this class of cases. If the focus of supply to the peritoneum be a mesenteric gland, a peri-appendiceal tuberculosis, the removal of the focus is indicated the same as a removal of a tube. Should the communication between the peritoneum and the focus be destroyed, then the laparotomy will produce a cure of the peritoneal conditions the same as if the focus is removed. But with the source of supply cut off, the tendency to repair of the peri-

toneum is great, even without laparotomy, and in this class of cases internal medication or expectant treatment avails. When there is a tuberculosis of the intestine and the peritoneum is involved without extensive adhesions, the indication is to remove the tuberculous intestine, unless the area be too great. If its removal be impracticable, the infected area should be excluded from the fecal current by short-circuiting the intestine. The tuberculous process in the excluded portion ceases to advance and often heals. The patient's life can be prolonged, and he can also be relieved of most of the disagreeable symptoms of his tuberculosis. Resection of the bowel for tuberculosis in the presence of a peritoneal tuberculosis is a very hazardous and usually futile undertaking, as an intestinal fistula is often produced when the patient survives the operation.

Treatment of the Nodular, Ulcerative and Perforative Varieties.

In this variety, based on the clinical history and physical findings as well as the biopsies, the changes, in a large proportion of the cases, are as follows: First, a more or less diffuse tuberculous peritonitis, usually of tubal origin, but due to enteric and glandular infection more frequently than the previous variety; second, the healing of the peritoneum except in circumscribed areas, as at the ends of the tubes, between firmly agglutinated intestinal coils and between the omentum and parietes. In these circumstances the tuberculous process destroys the peritoneum and occasionally the intestinal wall, tube, etc., and produces a considerable sized caseous mass. These masses are usually surrounded by firm connective tissue barriers, and unless they occlude the lumen of the bowel or perforate one of the hollow viscera, they give the patient very little inconvenience. There is commonly a considerable quantity of fluid in the peritoneal cavity, but the exacerbations and recurrences of the peritonitis are less frequent and mild, so that they are many times overlooked and the peritonitis is not even suspected until, on physical examination to ascertain the cause of the emaciation, night sweats, etc., the tubercular nodules are recognized in the abdomen. If the nodules are few and the peritoneum practically free from adhesions, good results are obtained by operative procedure. The tubes, in these cases, should be removed, if it can be accomplished without lacerating the intestinal wall. The circumscribed accumulation of tubercular material should not be disturbed and the greatest care should be exercised not to injure the intestinal wall or hazard its integrity, and so

produce an intestinal fistula. If the tuberculosis is confined to a few adjacent coils of the intestine and the remaining portion of the peritoneum free from adhesions, the coil should be resected; otherwise, the infected area should be excluded and allowed to remain. Should there be entero-intestinal fistula, as is common in this variety unless the peritoneum is comparatively free from tuberculosis, the resection should not be made, as failure of union is not uncommon, and intestinal fistula results. It is in this class of cases that the intestine is often incised in opening the abdominal wall. It is here also that the limitations of surgical intervention should be kept clearly in mind, and when the greatest discretion should be exercised in the separation of adhesions, having in mind that these adhesions are Nature's coffer-dams and are often life-saving. It is questionable whether surgery gives better results than internal medication in this class of cases. It does clear up the diagnosis, and, with proper discretion, adds nothing to the danger.

Treatment of the Adhesive Variety.

This classification of cases occurring as adhesive, fibro-plastic, cystic, partition and obliteration of cavity is explanatory of the pathologic changes. It signifies, first, that the process is severe in that it destroys at least the epithelial layer of the peritoneum; and, second, that the membrane has finally reacted to the production of firm encapsulating and reparative cicatrization. In the milder types of this variety, the entire surface of the peritoneum or circumscribed areas is gummed together with a web-like, mucilaginous substance which is easily separated, and when separated does not leave an abraded or oozing surface. If the process has been more destructive, the union is organized connective tissue and when separated leaves a bleeding, denuded surface; indeed, if the walls of the viscera do not tear in the efforts at separating adhesions, so extensive may this process be that the peritoneal cavity, as such, is obliterated. Surgery is of no avail in this class, and the intestine is in great danger of injury in opening the abdomen. Circumscribed cysts form between the intestinal coils and in the pelvis usually; they are usually small, holding but a few ounces; occasionally they contain quarts and are surrounded by agglutinated intestine and parietal peritoneum. These are to be opened and not drained; the walls cannot be removed, and their removal should not be attempted. The surface should be dusted with iodoform or sponged with a 1:1000 formalin solution, re-

membering that this sac is not peritoneum as a rule, but a cyst wall of inflammatory origin. These cavities should never be drained, as they are easily infected, and once infected, they continue as suppurating sinuses for months, often associated with pronounced symptoms of septic absorption, taking on the characters and dangers of the pathologic varieties to be described under the fourth classification.

These circumscribed cysts are often mistaken for ovarian or broad ligament cysts, and when efforts are made to remove the cyst walls the result is baneful to the patient and humiliating to the operator. The greatest care should be taken not to infect them when operating and the abdomen should be securely closed. After evacuation and irritation, the cavity is obliterated by adhesive inflammation.

Treatment of Mixed Infection, Circumscribed Abscess, and General Suppuration.

Pus infection may occur with any of the preceding varieties, or it may be one of mixed infection from the primary focus of tuberculosis and extension from there to the peritoneum. When the primary focus is a mixed infection, the abscess is always small and its extension is by ulceration, coagulation, necrosis and other than extension along the surface or through the lymphatics. If the primary focus is the tube and this is of the mixed infection variety, the end of the tube becomes sealed and a pyo-tuberculous salpingitis is established. The extension may be an ulceration through the fimbriated end and the formation of a circumscribed abscess in the cul-de-sac, ovary, or wherever the fimbriated end is adherent. The extensions from the mixed-infection salpingitis are usually by ulceration through its wall to the neighboring tissues; if the tube be adherent to the ovary, a tubercular abscess in one of the Graafian follicles to which it is attached is formed as shown in case of Miss N, reported above. If it adheres to the intestines, it may perforate its wall to a tubo-intestinal-sinus result.

This is one of the conditions to be apprehended in operating for tuberculosis of the tubes and peritoneum, and is one of the most dangerous, as fistulæ of the intestine of tubercular origin are difficult to suture on account of the infiltration of their margin and neighborhood. Resection is next to impossible, on account of the extensive adhesions; also the peritoneum, which is of such great importance in all types of intestinal approximation, has

been destroyed by the tubercular process, and therefore no primary peritoneal adhesions form to support the walls. In repairing these openings, extensive surface approximation should be secured and a number of rows of sutures inserted, that apposition may be insured during the process of tissue-regeneration.

When the perforation is in the first portion of the rectum, and that viscus fixed, I have, in two separate cases, successfully sutured the fundus of the uterus into the opening and secured a primary closure.

As agglutination and union of tissue is slow under these circumstances, intra-intestinal pressure should be reduced to a minimum by the use of a permanent rectal tube; or, if the opening be larger, a temporary colostomy should be performed until the perforation is closed. The large pus and tubercular accumulations in the peritoneal cavity are, as a rule, due to formation of circumscribed tubercular cysts, and these cysts have a secondary pus infection, producing the large mixed-infection tubercular abscess. These may range from the size of a walnut to an accumulation occupying the lower half of the peritoneal cavity. In one of my cases, there were no intestines except the descending colon and rectum below the umbilicus, a firm diaphragm of adhesions having formed across the abdomen at the umbilical level. The peritoneum above this diaphragm was free from tuberculosis; below the diaphragm was one large empyema of the peritoneum. After opening and draining, this wall was so dense and firm that there was very little contraction, and the patient succumbed to the toxemia of the mixed infection. The case should have been closed after the exploration and repeatedly aspirated and injected with a solution of glycerine 88 per cent., iodoform 10 per cent., formalin 2 per cent. In the more acute and virulent mixed infections, where a general tuberculous peritonitis has preceded, the intestines and omentum and abdominal wall become adherent in all varieties of ways, so that innumerable, circumscribed, non-communicating, suppurating pockets fill the abdominal cavity. These cases are practically hopeless; one, two, ten or innumerable abscesses may be overlooked; following the operative separation of the adhesions there is additional absorption, and the patient's life is rather shortened than prolonged by the operative intervention. Cases of this class can often be diagnosticated without section, as they present nodular, fluctuating or semi-fluctuating masses in the abdomen without assuming the general shape of the cystic neoplasms resulting from the ovary, kidney or omentum.

Here, exploratory puncture with a very fine needle is advisable and is one of the rare exceptions to the general rule against exploratory punctures of intra-abdominal enlargements.

In the mildest types of mixed infection the general peritoneal cavity is filled with a seropurulent effusion without limiting adhesions and without the destruction of the peritoneal endothelium. These cases are as favorable for evacuation and primary closure as the purely serous variety. They should never be drained, and if the cavity refills it should be aspirated. The greatest caution in instrumentation and sponging should be taken, lest a more virulent inoculation be established in the susceptible culture medium.

I desire to thank Dr. Hugo Wightman for his assistance in reviewing the literature.

100 STATE STREET.

TRANSACTIONS OF THE
SECTION ON GYNECOLOGY OF THE
COLLEGE OF PHYSICIANS OF
PHILADELPHIA.

Meeting of December 17, 1903.

The President in the Chair.

DR. STRICKER COLES read a paper entitled

THE IMMEDIATE REPAIR OF LACERATIONS AFTER LABOR.¹

DR. R. C. NORRIS.—It is interesting to hear Dr. Coles speak on this subject, and particularly in reference to the primary operations for laceration of the cervix. I know that a few men in the profession have come in recent years to repair injuries of the cervix immediately after labor. I have never been convinced that it is a good thing to do, either from the standpoint of obstetrics or of gynecology. From the standpoint of obstetrics, I have always been actuated by a feeling that any unnecessary handling of the puerperal woman is to her detriment. The danger of sepsis is increased tremendously by the manipulations necessary in performing a plastic operation on the cervix at this time, and especially is this true in private practice. By the closure of the cervix, drainage of the uterus, which we know is so essential to the lying-in patient, is prevented to a certain extent. Moreover it is true that many failures occur, as Dr. Coles has said, from dealing with contused, lacerated, swollen and edematous tissues. The placing of sutures in such tissue necessitates tight tying, which strangulates the tissues and may prevent union. When

¹Will appear in a succeeding number of the JOURNAL.

we operate for a deep lateral laceration with the cervix obliterated and the os dilated, the ureter may be displaced in such a manner that it may be included in the first suture. The results from a secondary operation are certain to be satisfactory. The plan never appealed to me theoretically, and I believe it is not a wise procedure. A large number of these cases of laceration heal spontaneously and never give the woman any further trouble. The injury in some cases leaves the patient with a slight degree of laceration, which I believe is a good thing in some women, for it subsequently secures good uterine drainage. Unless there is extensive laceration with serious hemorrhage, I would not attempt to repair it immediately or within a few days after labor. From every viewpoint, primary operation seems to me impracticable.

In treating lacerations in the vagina we have a different question to deal with, and immediate union is of distinct advantage, both obstetrically and gynecologically. From an obstetrical standpoint immediate repair lessens the opportunity for absorption of septic material, and this is the one important fact. From a gynecological standpoint one can obtain almost as good results in the approximation of muscles and fascia as subsequently, and one has, besides, the involution of the structures progressing in their proper relations.

As to the manner of applying the sutures. As Dr. Coles has said, we should attempt to approximate the torn ends of the muscle and fascia. I formerly used catgut sutures in the puerperal patient, but finally gave it up, because I did not obtain so good results and at that time could not feel the same degree of safety as now in the sterilization of the catgut; with that difficulty obviated, unless very heavy gut is used, it will not hold sufficiently long to keep the parts closely in apposition throughout the time necessary for union, and will absorb the lochial discharges, soften, and frequently become very loose. I see no disadvantage in the use of silkworm gut for all purposes, except the few stitches required in the rent of the mucous membrane of the bowel in sphincter lacerations. For the muscle in sphincter lacerations I also use silkworm, and the results have been so satisfactory I know of no reason why I should substitute catgut. I believe the average man will have great difficulty in finding and suturing separately the torn ends of the levator muscles. He often fails to find the laceration and he would surely fail to find the muscles. If the general practitioner can be taught to insert his needles deeply in the torn sulci and within the vagina, he will usually secure the ends of these muscles, and he will get better results than if he uses the buried suture, in an attempt to suture only the muscles. Unless the muscles are found and accurately apposed by these buried sutures he will not secure results which he can obtain by sutures passed deeply enough to grasp the ends of the muscles. He will probably not do the work in a strictly cleanly way, and he had better use a suture that is not entirely buried, and a suture like silkworm that can be boiled and sterilized at the time he operates.

I tried in my secondary operations the use of catgut sutures for the torn ends of the sphincter after Dr. LeConte, a few years ago, read a paper advocating this method. With two or three exceptions, the only failures I have had in sphincter operations have been when I had attempted to do this. Silkworm gut is less liable to carry infection and, in my experience, is more reliable. The use of buried catgut sutures for the levator muscles in the vagina in the hands of skilful men may secure good results, and may be an advance in method.

DR. H. D. BEYEA.—I have not had a wide experience in the primary repair of the common lacerations of the perineum after labor, but I am not infrequently called at such times to repair a laceration including the sphincter ani muscle, sometimes also the recto-vaginal septum. This is an important operation, and to gain the best results there must be an accurate apposition of the lacerated parts, and the tension of the sutures should be such as to maintain for several days the accuracy of the apposition. In the presence of swollen and edematous tissue it is most difficult to gain this accurate apposition, and sutures placed are found loosened and giving no support after 24 to 48 hours. I have therefore believed it advisable to allow 24 hours to elapse after labor before repairing a sphincter tear. There is no doubt but that if done immediately a good result may be obtained, but it is better surgery to wait for the changes which take place within hours and better assure the result of the operation.

In repairs of the recto-vaginal septum Dr. Coles advises, with many others, the repair of the septum by introducing the sutures from the rectal side; passing them through the rectal mucous membrane and tying them in the rectum. I have never been able to appreciate why this method is employed, for there is much more danger of infecting the sutures, they are more difficult of introduction and an absorbable suture material with its disadvantages must be employed. It has always seemed to me a better method to introduce the silkworm gut sutures from the vaginal surface, catching a large amount of septal tissue in the needle and having it emerge at, and not pass through, the rectal mucous membrane.

Some authorities have advised the intermediate repair of the perineum, that is, within a week or ten days after labor, during the granulation period. The granulating surface is bathed with pus at such times, and the pyogenic cocci must be present in such discharge and in the granulating tissue. The only failures, two, I have had in repairing a sphincter tear have been when the operation was performed under such conditions. It would seem to me quite impossible to gain a perfect operative result in this intermediate period.

I would like to ask Dr. Coles whether he has made any observations regarding the influence of immediate repair of the cervix upon the rapidity of the involution process.

DR. GEORGE F. SHOEMAKER.—The question of the use of catgut in the primary repair of lacerations after labor is a matter of

interest to all. I feel very strongly that it is not a suture which is suitable for that time and place if used without the support of a non-absorbable suture, such as silkworm gut. It is a suture which may do well in a number of cases, but in important critical cases it will, through too early absorption, give a poor result or prove a channel for the extension of infection. If a thoroughly reliable suture is used, while it subjects the patient to a little more discomfort in removal, the results are more satisfactory. I have absolutely abandoned the use of catgut alone. Used with other sutures to secure more accurate apposition, I believe the catgut is valuable. The use of the catgut in the sphincter I think a great advance in the secondary repair of sphincter tears. In the primary suture of the sphincter after labor we may not get as good result as we can secure in the secondary operations, but we will be likely to have a distinct gain. It is always well to use catgut in the ends of the sphincter at the primary operation, reinforcing with silkworm gut, and, if necessary, to do a secondary operation also.

DR. COLES, in closing, said: In answer to Dr. Beyea's question, I would say that if one sews up the cervix as one would any laceration, putting the stitches close together and sewing it up closely, one will so narrow the canal that involution will not be good. After labor the cervix is much elongated. The stitches must not be too close, but sufficient room must be left so that with the occurrence of involution there will be left an opening large enough to give drainage. My results in sewing up lacerations have been good, especially in cases where the tear extends up to or near the vaginal wall and when there was bleeding, provided the cervix was not closed sufficiently to prevent drainage. In regard to the sphincter, I could not pass a silkworm-gut suture through to bring the ends of the sphincter together. In one case especially, with the tear at one side, the sphincter had retracted a quarter of an inch. I have never had any difficulty in finding the sphincter. I am always afraid of catgut, and I pass silkworm-gut sutures well down. The sphincter is always brought together with one or two catgut sutures. I would never be certain that the sphincter was brought together, unless I had catgut sutures through the end and would feel the sphincter contract on my finger. My results have been very good. In two cases which I have seen afterwards there was no trace of the laceration, although it had been complete and extended for at least two inches up the rectum. I am always careful to see that the tissues are brought together in direct apposition, and that the sutures are passed in a circular direction through a large amount of tissue. If the suture is placed too close to the edge of the tear, when it is tied there is too much puckering. The separation of sutures from the retraction of involution I have never seen. I have had little experience with granulation tissue, because I repair all cases at once. Regarding the intermediate repair of laceration, I think that in the majority of cases one cannot get the patients to submit

to it, while very few object to the immediate restoration. In the poor classes I would especially recommend immediate repair.

DR. GEORGE E. SHOEMAKER reported the following cases:

CYSTIC CARCINOMA OF THE OVARY.

This large tumor of the right ovary was removed from a patient 53 years of age, who had one child 31 years before and no miscarriages. The menses were regular and normal until one year before coming under observation, but at that time they increased from four to seven days in duration. They were then missed entirely for eight months. Three periods then appeared, and recently there had been none for three months with no spotting of blood. Within the past four months there had been four attacks of abdominal inflammation accompanied by soreness, pain, vomiting, and fever. A tumor was first discovered about seven months ago; while very marked bladder pressure and distress had been present since the first inflammatory attack. She had lost 21 pounds in weight in a year, was pale, but not distinctly cachectic. Examination showed a rounded irregular tumor filling the pelvis in front of the uterus, and extending nearly to the umbilicus. It presented, behind the pubic bone, as a rounded, fixed, firm mass with a single rounded knob near the cervix. On injecting the bladder, it was found not to rise between the tumor and the pubic bone, but to extend backwards and to the sides. According to the observation of her physician, Dr. Mayhew, of Bridgeton, N. J., the tumor had increased decidedly within six weeks.

Operation at the Presbyterian Hospital, October 29, 1903. The peritoneal cavity contained a small amount of fluid looking like dirty water. Minor adhesions of the omentum were easily separated over the tumor, which was found to be cystic above and solid below. Some coils of the small intestine, and the descending colon, which were flaccid, were plastered over the wall of the cystic portion of the tumor, which wall was exceedingly thin in spots, as though thinned out by rapid distension. The slightest efforts to separate the intestine from this wall ruptured it, and allowed the escape of brownish thin fluid from the cyst accompanied by masses of friable degenerating tissue, which were detached on handling. The solid portion of the tumor was now exposed within the sac. It was from four to five inches in diameter, without capsule. The superficial portions were soft and easily broken off, almost structureless in appearance, while the deeper portions were firm. The growth had undermined the right broad ligament, and the right ureter was seen passing over its outer surface, high up. The growth appeared to be sessile at first in the pelvis, and with the greatest difficulty the intestines and bladder were separated, and the semblance of a pedicle was formed. The thin walled cystic portion referred to had to be removed piecemeal from the intestines, and after patient effort a broad pedicle was formed behind the solid portion, which was temporarily

ligated in sections, and the mass removed. The stump was now sewed with a non-cutting needle and chromicized catgut, and its arteries separately secured. Though the operation was a difficult one, the patient's recovery was not eventful. She returned to her home in New Jersey in the usual four weeks. Microscopical examination of the removed tissue was somewhat unsatisfactory, as the tissue was difficult to cut, and did not stain well owing to degeneration. According to the laboratory report, there were in several places nests of epithelial cells, apparently running in from the lining of the cyst. A guarded diagnosis of carcinoma was warranted from the findings. The microscopical diagnosis of malignancy was fortified by the naked appearance of the tumor, which did not have the well developed wall of an ovarian cyst, which is commonly of uniform thickness; but this growth had a delicate wall of irregular thickness, giving way at points on gentle separation of adherent intestine, and the solid portions of the growth had a very characteristic, friable appearance of malignant tissue. There was no dendritic appearance which suggested papilloma.

OVARIAN CYST, CHRONIC APPENDICITIS, WITH OCCLUDED TUBES.

Mrs. C., 21 years old, one birth. About the time of marriage, two years ago, the present illness began as irregular, more or less severe pain and soreness in the left ovarian region, lasting two to three weeks at a time. When these attacks of pain were present, walking and jarring caused pain in the left side. There was a constant discharge for two years. She was sent by Dr. Robert Elmer to the Presbyterian Hospital, where examination showed a pelvic mass and adherent tubes. Microscopical examination of the discharge was negative for the gonococcus. Operation: median section. The left ovary contained a cyst three inches in diameter. The organ was spread out over the wall so that its stroma was, with difficulty, distinguishable. Evidently a true cystoma of the ovary, it was removed with the thickened tube, after separate ligation of the blood supply with catgut. The top of the broad ligament was whipped over. The right tube was long, and its fimbriated end firmly adherent, low down behind the uterus. It was released, and the lining membrane not being badly degenerated, was stitched open with catgut. Firm adhesions were found in the region of the appendix, which was situated between the layers of the mesocecum. It was released with difficulty and removed, and its stump buried. Examination showed it to be the seat of chronic catarrhal inflammation. The abdomen was closed by through and through sutures, and the aponeurosis separately sewed. The patient made a typical recovery, and was discharged well at the end of the usual four weeks.

CHRONIC SALPINGITIS WITH ACUTE EXACERBATION, AND EXTRA-UTERINE PREGNANCY.

Mrs. V. T., colored, servant, one child five years ago. Menses regular and normal except for pain. One inflammatory attack

eighteen months ago. Present illness began two months before coming under observation. No periods were delayed or missed, but the flow has appeared at intervals of three weeks since that time. Great pain began in the lower abdomen one month ago, and has continued at intervals ever since. The pains were sharp and knife-like, causing the patient to double up and cry out, but no collapse occurred at any time. Vomiting had begun two days before, and nothing was retained on the stomach. There had been chills with restlessness, and pains in the chest. The temperature was 102° . Examination showed: hemoglobin 42 per cent.; white blood cells, 19,600; and red blood cells, 4,240,000. The patient's lips were pale, the abdomen was distended without rigidity, the bowels had been freely moved, and there was severe pain at intervals. Examination showed the uterus upright, a little enlarged and fixed. A firm, rounded, and tender mass was behind the cervix, extending into the right pelvis. There was no fluctuation, and no sensation of the presence of a movable clot. The breasts were negative, and the vagina a little blue. Temperature ranged from 102° to normal, and the pulse from 96 to 124. The symptoms of extra-uterine pregnancy were not considered conclusive, as the small mass was firmly fixed, and there were evidences of active inflammation. Consistent with the presence of extra-uterine pregnancy were the low hemoglobin, the pallor of the lips, the slightly blue vagina, and the paroxysmal pain. Acute pelvic inflammation was also evidently present. Leucocytes, 19,600. There were a fixed tender mass, abdominal distention, chill, vomiting, and fever, while all the symptoms except the low hemoglobin could be accounted for on the theory that the disease was exclusively inflammatory. It is common to find increased and irregular bleeding in acute salpingo-oophoritis. That the low hemoglobin was a deceptive symptom, after all, is shown by the fact that at the operation not more than six or eight ounces of incarcerated blood was found, and this was insufficient to cause the hemoglobin change. The whole case illustrates the obscurity of the diagnosis of extra-uterine pregnancy, in the presence of acute inflammatory symptoms with large fixed pelvic masses.

Operation.—There were no adhesions in the anterior abdomen. Uterus, broad ligament, and intestines were adherent over the pelvic contents. There was no free blood in the peritoneal cavity, but on separating adhesions, several ounces of dark fluid blood escaped from a hematoma of the pelvis. The right tube and ovary were very firmly bound down by old adhesions, and the tube was more than an inch in diameter, its lumen sacculated. The transverse bands suggested the appearance of the colon. The right tube and ovary were removed after a difficult dissection. No fetus was seen. The left tube was disorganized by inflammation and was removed. The ovary appeared sound, though swollen, and was allowed to remain. Bleeding from the extensive raw surfaces was persistent, especially from the wall of the rectum. The usual methods failing to check this, the vaginal cul-de-sac was opened

upon a pair of forceps, the end of an iodoform gauze bandage passed into the vagina, after which the remainder of the bandage was packed into the pelvis. This procedure controlled the bleeding. The abdominal wound was closed by through and through sutures, and the aponeurosis stitched with catgut. Between the second and sixth days of convalescence the gauze was withdrawn without difficulty from the pelvis through the vaginal opening. Merely pulling it out through the vagina with the forceps was sufficient without the use of a speculum or changing the position of the patient in bed. It was not replaced, but a daily vaginal douche, under very low pressure, was afterwards administered. No attempt was made to wash out the pelvic opening. Convalescence was satisfactory. Vomiting ceased entirely after the operation. The temperature reached 101° on the second and fourth days, but promptly became normal, and no other complications developed. The diagnosis of extra-uterine pregnancy in addition to salpingitis in this case unfortunately rests upon the presence of hemorrhage alone. There was apparently no placental tissue in the dilated tube, or among the extensive ragged surfaces left after difficult blunt dissection; the identification of fetal remains was impossible. In conjunction with the diagnosis of acute and chronic pelvic disease, as extensive as in this case, the additional diagnosis of extra-uterine pregnancy before operation must always be tentative. The well known expedient of introducing vaginal drainage for intractable oozing is very unusual in my hands, but in this instance proved useful.

DR. H. D. BEYEA.—Dr. Shoemaker speaks of a small cystoma, a cystadeno-carcinoma, of one ovary. Adeno-carcinoma of the ovary is nearly always a bilateral disease. I would like to ask what was the condition of the ovary of the opposite side in this case. I think I should fear to leave one ovary behind where the other was changed into a small semicystic tumor showing unquestionable microscopic evidence of malignant disease. Such a case should certainly be carefully watched, for the same disease is very apt to develop later also in this remaining ovary. In such a case operated upon by Dr. Penrose, the disease developed in the remaining ovary within a few months, the ovary was removed, and subsequently the patient died from a recurrence of the growth in the epigastric region.

DR. R. C. NORRIS.—Dr. Shoemaker has brought two especially noteworthy facts to our notice. The first is the question of diagnosis of extra-uterine pregnancy when we find bleeding from an enlarged tube, or have a clot in the tubal lumen. In the relatively early literature of extra-uterine pregnancy every case of pelvic hematoma or hematocele was diagnosed as extra-uterine pregnancy. In a number of doubtful cases there has been no microscopical examination to definitely settle the question. The time has come when we should be more careful in making examinations after the removal of such a tube and ovary to settle carefully the character of the lesion present. I recall a case operated upon three

weeks ago, sent into the hospital as one of miscarriage. There were elevation of temperature and evidence of tubal enlargement. There was nothing in the history to suggest extra-uterine pregnancy. The abdomen was opened and the tube and its clot presented the clinical picture of an extra-uterine pregnancy, but the specimen is now being studied before making a definite diagnosis. I propose to have this study made as a routine in similar cases. The work in this line done abroad shows that a great many cases of hematoma were not extra-uterine pregnancies. The second subject of interest is the use of the gauze pack or drain in the cul-de-sac. During the last two or three years when I have been called upon to drain I have always done it in this manner. The extent of the opening of the cul-de-sac and the length of time the gauze is to be left in place, depend upon whether it is used to control bleeding as Dr. Shoemaker used the gauze or for drainage of the pelvic contents. For the latter purpose, it is unnecessary to do more than make an opening through the vaginal vault large enough to admit the end of the forceps. There must be a large free opening if we are to drain through this channel. Gauze so placed becomes saturated within twelve hours and loses its capillarity at the end of that time. I have known cases to do badly by leaving the gauze drain so long as five days in the pelvic cavity. At the end of twenty-four hours, especially when it is used to control bleeding, or when a virulent infection is suspected, I remove the gauze packing, not waiting for the limiting adhesions. Even after twenty-four hours it will be soggy. Having lost its capillarity, it acts like a stopper and prevents the very action we aim to produce. My experience has taught me that if we are compelled to drain through the cul-de-sac with gauze, it must be removed earlier than the third or fourth day, particularly in cases where there is much oozing. It has been impressed upon me from my experience that if I am called upon to use the gauze pack and want free drainage, I should use in addition the glass tube or remove the gauze early. During the past week I removed a densely adherent dermoid tumor on one side and a tubal abscess on the other, with widespread adhesions. I did a hysterectomy, and having a raw, oozing pelvic cavity, felt that I must pack the pelvis with gauze in this manner. I did so. For the first twenty-four hours the patient did well. She then began to have a rising temperature and a comparatively rapid rise in pulse. There was little drainage in the vagina. At the end of twenty-four hours I removed the gauze. I found it saturated, and after its removal several ounces of bloody serum flowed into the vagina. I introduced a two-way catheter and gently washed out the cavity. This was done at three in the afternoon. By seven the pulse had fallen to 100. This is only one of many cases demonstrating the value of getting serum out of the pelvis. Gauze will not do it. We should not wholly forget the value of the glass tube, which many times has served its purpose well, and for these grave cases, the

gauze pack to isolate a septic, oozing pelvis, can be happily reinforced by the tube until the oozing has been controlled.

DR. SHOEMAKER closes.—I believe the second ovary should always be removed in suspected malignant conditions. In this case the ovary appeared normal. It was not removed with its tube, because the patient was old and was in poor condition. She had a long and very difficult operation, and I was glad to get her off the table without doing any more. In each of the other cases one sound ovary was left in, because they were young women.

The question of the diagnosis of extra-uterine pregnancy in the presence of blood without the microscope is a difficult one. My experience has been that reports from microscopic examinations are often unsatisfactory, unless a perfectly typical specimen can be submitted. Where the pregnancy has been early and much effort has been made as here to wall in and absorb the blood, a typical specimen can hardly be obtained. We have all seen the ovary distended by hematoma, the cellular tissue infiltrated with blood as if injected, and this condition I do not believe due to extra-uterine pregnancy. Where we have a distinct intra-peritoneal hemorrhage, six or eight ounces or more, I doubt the origin being other than extra-uterine. The evidence of extra-uterine pregnancy is not always found in the tube. I have had at least three cases where the product of conception escaped from the fimbriated end of the tube into the abdominal cavity, and there formed attachments while the tube remained intact. In this case I think that had probably occurred. The specimens were very ragged from the old inflammatory tissue, and I could identify nothing on the removed specimens as the placental site. It could not be identified, except by extensive search over the ragged surfaces left in the pelvis.

I have almost wholly abandoned drainage in my work, unless the bowel is injured, in which case I think it should be carried out. When vaginal drainage is used, requiring gauze, as after panhysterectomy, I believe it is desirable to withdraw the gauze a little at a time in the first week. That allows the adhesions which have formed between the intestines to follow the gauze as it is withdrawn, and the peritoneal cavity is never reopened. If gauze is withdrawn within two days after operation, I believe we reopen the peritoneal cavity in many instances by breaking friable and recently formed adhesions.

DR. R. P. McREYNOLDS read a paper on

PELVIC CELLULITIS.¹

DR. R. C. NORRIS.—I think that with one exception Dr. McReynolds has reported his cases without speaking of their histories bearing upon the etiology of cellulitis. In one case he did refer to it as being of puerperal origin. I believe it is pretty generally agreed that pelvic cellulitis, apart from tubal and ovarian diseases, is commonly puerperal in origin. That brings us to

¹See original article, page 200.

discuss the treatment of these cases from the standpoint of obstetrics and has to do with the surgery of the puerperal period. When he enumerated the different courses of the burrowing of the pus, I was casting about in my mind for cases of this kind which I have seen. I recalled one case with an area of distribution not mentioned in his classification, in which the abscess had formed between the layers of one broad ligament, and burrowed anterior to the bladder opening into the broad ligament of the opposite side. I recollect a case sent to me by Dr. Callen, of Shenandoah, with a puerperal history of a mild grade of infection. The woman presented the clinical pelvic signs of a densely adherent and distended tube and ovary on one side. The abdomen was opened and the tube and ovary were found apparently perfectly normal, but upon that side there was this dense hard mass which seemed to have an intimate association with the pelvic bones on that side. The abdomen was closed, and it was determined to observe the patient and note whether or not this was an abscess which would further extend, or whether there was bone disease requiring treatment by the general surgeon. After two weeks a cellular abscess was drained between the cervix and bladder, the abscess being dumb-bell shaped, involving both broad ligaments with an isthmus lying between bladder and cervix. Dr. Guthrie will recall a case I saw with him where there was no formation of pus, but infiltration of the broad ligaments and pelvic cellular connective tissue spreading along one ureter up into the flank, and in which we operated prior to the formation of pus. The temperature was 104-105. The woman, recently delivered, was taken hurriedly to the hospital, the abdomen was opened, and there was found a brawny infiltration of the broad ligaments and the pelvic floor as just noted. Hysterectomy was done without any effect upon a rapidly fatal lymphatic infection, which had its origin through infected areas in the vagina near the cervix. Virulent infection spreading rapidly through the lymphatics, as in this case, rapidly destroys the patient before the formation of pus and without attacking the peritoneum.

As to the surgical treatment of puerperal infection, I believe that if we have a puerperal case which presents upon bimanual examination localized swellings or other tangible evidence of localized infection, that case should be subjected to prompt surgical treatment. In some cases the diagnosis is so uncertain, even when one has had a large experience in studying puerperal cases, that a vaginal opening for exploration and for drainage is a relatively safe operation in the hands of skilful men. Sometimes it is necessary to do an abdominal operation solely for the same purpose of determining whether these localized collections of pus are extra-peritoneal and due to cellulitis, and then to open them extra-peritoneally as seems best.

DR. H. D. BEYEA.—I have had under my care two such cases within the last few months. In one case vaginal puncture of a large abscess involving the pelvic connective tissue at the base

of the right broad ligament was performed. The pelvic examination determined that there was no tubal or intra-abdominal involvement. Two or three months later a perinephritic abscess developed and a tract communicating with the vaginal fistula formed. After a serious illness of two years the patient is able to be about, but the fistula in the lumbar region still discharges pus. In the other case also it was apparent from the pelvic examination that there was present a pelvic cellulitis and abscess formation in the left broad ligament. The abscess was opened extraperitoneally, just above Poupart's ligament. If one studies the history of such cases and makes a careful bimanual examination, particularly after the acute stage has subsided, I think he will almost always be able to make a diagnosis of the condition and avoid exploratory celiotomy. In most cases a vaginal puncture has been the successful operation. I would agree with Dr. Norris regarding the Pryor treatment of puerperal fever, for I cannot appreciate how this would prevent the spread of such a virulent infection, and in many instances I believe it would be a harmful procedure.

DR. McREYNOLDS, in closing the discussion, said: I agree with Dr. Norris that pelvic cellulitis most frequently follows pregnancy. However, in looking over the literature I found a number of cases reported which followed operations upon the cervix—in pre-antiseptic days it is easy to see why this should have been, but now it must be very rare to have it follow such operations.

TRANSACTIONS OF THE CHICAGO GYNECOLOGICAL SOCIETY.

Meeting of November 20, 1903.

The President, EMIL RIES, M.D., in the Chair.

MULTIPLE FIBROIDS OF THE UTERUS WITH COMPLICATIONS.

DR. EMIL RIES.—I have a specimen which was removed from a woman, 49 years old, who had been in good health until May of this year, with the exception of frequent and copious menstruation. In May of this year she was taken with symptoms of peritonitis. About the middle of October came to me for operation. I found multiple fibroids of the uterus on the right side, the tumors extending down to the right of and behind the uterus into the broad ligament, so that they could be felt by the side of the vagina. On the left side there was a small enlargement of the appendages. In the course of the operation the tumors were found to consist of multiple fibroids of the uterus, submucous, intramural, and subserous; on the left side there was an old pyosalpinx; on the right side there was an old pyosalpinx and an ovarian abscess communicating with the pyosalpinx, and

attached to that the appendix. The tumor which could be felt through the vagina on the right side, extending down into the broad ligament, was this large abscess, which was filled with stinking pus. I removed the whole specimen in one piece. I cut through the appendix afterwards and found there was a chronic thickening of the appendix, but no direct communication between the appendix and abscess. Nevertheless, there is the possibility of this abscess being due to micro-organisms emigrating from the appendix. This ovarian abscess had developed in the broad ligament to such an extent that when it was removed the ureter and the internal iliac artery, and, to a certain extent, the external and common iliac arteries, were exposed freely. They were covered over with peritoneum again, and the patient made a smooth recovery.

DOUBLE UTERUS WITH DOUBLE TURO-OVARIAN ABSCESS.

DR. PALMER FINDLEY.—The patient from whom this specimen was removed (postmortem), died of general suppurative peritonitis. The infection extended from the appendages. She was 38 years of age, and had borne three full term children. There was no history of infection of any sort at any time. The original infection was probably gonorrheal. The patient declined operative interference of any sort, and died one week after admission to the hospital. I show this specimen because of the unusual occurrence of a double uterus with tubo-ovarian abscesses leading from each side.

TUBAL ABORTION.

The second specimen is that of a tube with the fetal membranes protruding from the abdominal end. The patient had borne two children. There was no history of any pelvic disorder. Her last menstruation occurred about eight weeks prior to the operation. There was a distinct history of two separate intra-abdominal hemorrhages occurring a few days before the operation. I operated twenty-four hours after the two hemorrhages and removed this tube and its contents, together with about one gallon of blood free in the abdomen. She recovered uneventfully.

DR. T. J. WATKINS.—I would like to ask Dr. Findley why he attempted drainage if he thought the case one of gonorrheal infection, as these are bad cases for drainage, and why did he not complete the operation by a vaginal celiotomy or hysterectomy?

DR. PALMER FINDLEY.—I think the pathologist (Dr. Le Count) could answer the second question asked by Dr. Watkins. He was unable to map out the relations of anything in the pelvis, and high above it. When he opened the abdomen post-mortem, everything was massed in the exudate, and it was not until some time after, while he was engaged in untangling the tissues, that he was able to make out where the uterus, tubes and ovaries were. I cannot see the possibility of removing such a mass either through the abdomen or vagina.

So far as drainage is concerned, I do not see the force of Dr. Watkins' question. I do not know that it was a case of gonorrheal infection; I do not know yet whether it was gonorrheal in origin. At all events, the woman was markedly septic and died from sepsis, and I certainly thought it was right to drain, if possible, and preferably through the vagina.

DR. RUDOLPH W. HOLMES.—Very often in obstetric and gynecologic work as in other branches of medicine, it is necessary to give saline infusions; oftentimes it is very essential that the temperature of the solution should be fairly accurately determined, but this is impossible unless there be a contrivance which will record the temperature at a point near the needle. The temperature of the water in the container is by no means that of the solution as it enters the body, for it has been conclusively shown that there may be a very material loss of heat in passing slowly through a tube of small calibre. Kemp and others have shown, particularly in the case of hemorrhage or shock, that the solution ought to be hot for its stimulating effects, and that 110 to 115 degrees is appropriate in such cases. With the idea of measuring reasonably accurately the temperature of the solution near the needle, a glass blower, Mr. Daigger, of Chicago, made these tubes which I exhibit. They are, by the way, merely large models of what he will make compactly as soon as he obtains suitable small thermometers for the purpose. This tube, when finally made, will be not more than six inches long, with a calibre of hardly a half inch; within the tube will be placed a thermometer registering 212 degrees, so that the apparatus may be sterilized by boiling. The ends will be beveled, so one may easily slip on the rubber tubing. This glass will be inserted a few inches from the needle, and not only will record the temperature, but in addition will demonstrate if, by accident, air is imprisoned in the tube. This apparatus has shown that there is a fall of ten to thirty degrees in the temperature of the water in its progress from the container to the needle, the amount depending on the rapidity of the flow and the size of the tubing, and also the temperature of the room.

DR. EMIL RIES read a paper entitled

A CONTRIBUTION TO THE FUNCTION OF THE CORPUS LUTEUM.¹

DR. T. J. WATKINS.—A plastic operation upon the ovaries frequently produces some bloody discharge independently of the menstrual period, so it is possible that Dr. Ries, in suturing the ovary, produced the menstruation or bloody discharge.

DR. EMIL RIES.—Fraenkel made experiments to determine whether a plastic operation on the ovary, the removal of the follicle, prevented menstruation. If he manipulated an ovary by resecting a mature follicle, which is a plastic operation on the ovary,

¹See original article, page 165.

menstruation was skipped. That is why the connection seems to be established to a certain degree.

Unintentionally similar experiments have been made by a number of men in this city, who consider mature follicles signs of cystic degeneration of the ovary, and have resected the ovary whenever they have gone into the abdomen, and it will be interesting to hear from those gentlemen as to the influence of these operations on menstruation. As these operations are done quite frequently, it is possible to determine within a short time whether there is really such a connection between the mature follicle or corpus luteum and menstruation.

The relations between the corpus luteum have been worked out by Fraenkel to such a large extent, and he brings so many points up in connection with a corpus luteum, that the matter is well worthy of our attention. For instance, he states that when ovariectomy is done early during pregnancy, the abortion is not the consequence simply of manipulating the uterus or the appendages, but merely the consequence of the removal of the corpus luteum of that pregnancy. After about the third month pregnancy can go on alone without the corpus luteum, but up to that time it depends upon the corpus luteum, and if that corpus luteum is removed abortion is sure to follow.

The connection between corpus luteum cysts and malformations of the fetus or myxomatous degeneration of the placenta, a matter which Dr. Findley has worked on, is also mentioned by Fraenkel.

DR. PALMER FINDLEY.—The following abstract was received from Dr. J. M. Baldy, of Philadelphia, with his permission to use as I may desire. At our last meeting I showed specimens of a menstruating Fallopian tube. In this abstract Dr. Baldy gives an interesting report of a case in point:

" . . . One point of scientific interest I have as yet failed to mention. While the uterus was inverted, the uterine openings of the Fallopian tube were in plain sight. I had several opportunities of observing the patient during the process of menstruation. The dark *menstrual blood all came from the tubes*. The mucous membrane of the uterus remained in the usual condition, but the flow from the tubal openings was free and had all the characteristics of the normal menstrual blood. This would seem, then, to go a great way towards sustaining Tait's theory of menstruation. The fact that there was no exudation from the endometrium is not so surprising, considering how long it had been exposed to foreign influences, but the free tubal hemorrhage is significant. I have seen cases of inversion in which the bleeding occurred all the more profusely from the endometrium, but the inversion in these cases has been of more recent occurrence, and there were in one case polypoid growths at the fundus. . . ." (*Medical and Surgical Reporter*, Philadelphia, 1891, Vol. LXV, 123-125.)

DR. CARL WAGNER read a paper entitled

MODIFIED PORRO OPERATION, WITH REPORT OF A THIRD CASE.¹

DR. RUDOLPH W. HOLMES.—When Dr. Wagner reported his first case, I took the stand that the removal of the full time uterus with its contents in situ, was an operation which, in appropriate cases, would be of signal value, that is, when it was definitely known that the baby was dead, and when we had an infected uterus; that the liquor amnii was also infected could rarely if ever be elicited, certainly, until its character was inspected by the eye, and its odor obtained by the olfactory sense, and even then we would often be in doubt. In his first and second cases he conclusively showed that it was possible to remove the intact uterus without injuring the membrane; in the second case he demonstrated that it was also possible to remove the uterus in this manner with a live baby, even though this fetus was only five or six months old, intra-uterine life. This operation reduces the risk of peritoneal contamination to the minimum.

In the third operation, in which I assisted him, the work was very rapidly performed; it demonstrated that it was possible to remove the full time uterus without apparent injury to the child. There was very little blood lost, less than in some of the Cesarean cases I have seen. After the operation, I remarked to Dr. Wagner that I thought the way he grasped the uterus defeated in part the purpose of the hysterectomy, for it practically precluded a cervical amputation, which was the desideratum in cases of infected uterus. Especially was this objectionable in cases where the operation was performed late in labor, for here the lower uterine segment was pulled out, as also the cervix, and, therefore, more uterine tissue would be left than was desirable. In cases with intact membranes, the danger was great of rupturing the membranes, the principal intent of the operation being to prevent this complication. In the third case the membranes had been ruptured about eight hours. I believe his original technique, used in the first two cases, is preferable. The round ligaments and ovarian vessels should be ligated, the tissues severed, ligatures applied to the uterine vessels, quickly tied, and the uterus rapidly removed. If the child be alive then a bystander may remove it from the uterus quickly. However, I believe that all will agree with me that the safer method in cases of living children, is to do the Cesarean operation, then proceed to the removal of the uterus. In instances of dead fetus and infected uterus, I believe his operation will be valuable.

DR. GUSTAV KOLISCHER.—There are two points I would like to discuss in connection with the case reported by Dr. Wagner. Total hysterectomy in cases of infected pregnant uterus was first advocated by Wertheim if indications for Cesarean section be present. His contention was that the results of supra-vaginal

¹See original article, page 195.

hysterectomy in cases of this kind are poor, while the results of total hysterectomy are favorable.

With reference to the operation described being a modified Porro operation, I do not see in what essential feature the essayist has modified the operation.

DR. WAGNER.—The Porro operation is one that is done in two different parts. The first part consists in performing Cesarean section, taking out the fetus and placenta, and the second part is to open and evacuate the uterus. The Cesarean section is usually followed by considerable hemorrhage; it prolongs the operation. Besides, it invites infection with the fingers.

DR. KOLISCHER.—There is a misunderstanding in regard to the Porro operation. The principle of the Porro operation is constriction of the cervix before the uterus is open and removal of the uterine body above the constricting ligature. So, I can see no innovation in constricting the uterus below the fetus. For the same reason it can hardly be understood how a dangerous hemorrhage should occur in a Porro operation as the essayist claims. To lift the lower uterine segment high up by means of vulsella and to run a knife around it in a hurry is dangerous, because, in this way, the bladder is drawn up and might be injured by the knife. If one is in a hurry to perform total hysterectomy in case of an infected pregnant uterus, time can be saved and all hemorrhage prevented by catching the ligaments on either side with clamps. The uterus now can be exsected and the fetus cared for in short order, while after this is accomplished the desired method of suturing or ligating the ligaments and vagina can be attended to.

DR. HENRY BANGA.—When the Doctor took hold of the lower uterine segment and applied forceps, I feel sure that it was not this constriction with the hand that stopped the hemorrhage, but that it was his catching the uterine artery. As Dr. Holmes has described, he applied forceps below at about the level of the internal os.

DR. WAGNER (closing the discussion).—With reference to the remarks of Dr. Holmes as to the possibility of injuring the membranes, I stated in my paper that if one is afraid of injuring them, it is easy to make the first opening with the knife in the uterus, and then before inserting the scissors to have the assistant place from one to three fingers from above downward and inward in this opening, in such a manner that he can hold back the membranes, placenta, and the protruding parts of the body of the fetus, just as we did in the last case.

With regard to the remarks of Dr. Kolischer, about the principal features of the Porro operation, I would like to say that the Porro operation is something entirely different from what he states, and differs greatly from my own operation. The Porro operation is a double operation, while mine is a single operation. In the Porro operation we first open the uterus, deliver the child, and, secondly, amputate the uterus and fix the pedicle in the lower

abdominal wound. In other words, there are two operations in the Porro, of which the first consists in an abdominal Cesarean section, and the second in the amputation of the uterus. The first alone of this operation is a very sanguineous and certainly more dangerous operation than my own, as statistics go to show. The principal feature of my operation is that the placenta, membranes and fetus are left in situ until the organ is entirely removed. Thus, we have to deal with the amputation only, instead of the two operations; it is shorter in duration, as the amputation proper took only one minute; and safer, as in the three cases of mine and that of Dr. Webster there was absolutely no mortality, while the mortality of the Porro operation proper has been very high.

In regard to the constriction, a feature upon which he dwelt so much as a distinguishing point, I would like to say that this was considered only a side issue which occurred to me during the last case, and proved to be a very helpful and simplifying procedure.

In reference to the remark of Dr. Banga, I noticed plainly that the uterine arteries were not within the grasp of the forceps. They stood out plainly on the cut surface of the cervix, so that one could readily see their large lumina. I never tied them separately, but simply enclosed them in the continuous sutures which bring the different layers of the cervix in apposition. I use one running suture for the muscular, and one for the serous coat.

DR. FRANK ANDREWS read a paper entitled

SALPINGITIS.¹

DR. T. J. WATKINS.—It is rather surprising that there are not more extensive records of bacteriological examinations of cases of pyosalpinx. The statistics do not illustrate in any sense the number of examinations made; they show that these examinations are not placed on record, as probably in most hospitals smears and frequent cultures are made in cases of pyosalpinx. One extremely interesting point is that in these cases of pyosalpinx the pus nearly always becomes sterile in a short time, and yet these patients have repeated attacks of pelvic peritonitis. An interesting point in this regard is the question of migration of bacteria through the intestinal wall, where the intestine is adherent, and possibly that would explain some of the cases of recurrent attacks of pelvic peritonitis. Some recurrences might be explained by fresh infection from the endometrium and vagina. The presence, however, of so-called latent bacteria in the tissues is the most probable cause of the recurrent attacks of inflammation.

DR. J. F. PERCY, of Galesburg, Illinois.—In reference to the question of the persistence of the virulence of infection of the tubes, I have in mind a case that I saw about a year ago. The patient was a servant. She was in apparently perfect health, when her husband, who was a soldier, returned. She left the neighborhood, and I did not see her for about four years. At that time she was suffering from general exhaustion due to sepsis.

¹See original article, page 177.

She was so emaciated that she could not put her lips over her teeth, and had an elevation of temperature. On vaginal examination I found a mass in both sides of the pelvis. On the left side it was down in the cul-de-sac, so that it was easily made out. I was not so sure of the condition on the other side.

The question was, how should I operate on this woman, and how virulent was the infection? She had never borne a child; the vagina was small, so to test the question of virulence, I passed a needle into the mass on the left side, withdrew some pus, and injected a few drops into the abdominal cavities of two rabbits.

They became very ill within twenty-four or thirty-six hours, but they did not die. Because of that, and the fact that the vagina was so small, I decided to go in through the abdomen. When I opened the abdomen I found an enormous pus tube on the left side, but on the other side a condition that I could not diagnose with any degree of certainty. I succeeded in liberating the left tube from the uterine end, but could not with safety get it all out of the pelvis, so I removed all that I could and drained. Then I made an incision through the vaginal fornix, on the side of the uterus, and opened up the sac that contained a great deal of degenerated material, which, under the microscope, revealed an extrauterine pregnancy.

As far as I am aware there is no literature which would serve as a clinical guide for determining this very important question. The persistence of virulent pelvic infections must vary within wide limits. In this case four years had elapsed between the return of the husband and the operation. On questioning the husband, however, he denied any specific infection.

DR. A. BELCHAM KEYES.—It seems to me that in his nomenclature of the different inflammations of the tubes of Dr. Andrews, these should be divided into (1) the catarrhal, (2) the purulent variety, and (3) the tubercular purulent variety, because in recent reports the tubercular purulent variety has shown a marked increase in number of cases, and many cases of the old authors, in which the pus was regarded as sterile, were undoubtedly cases of tubercular tubes, especially those in which there were large pus tubes, which extended in some instances up to the umbilicus. They were considered anomalous because the patients carried such tubes so long with but slight symptoms.

Infection from the abdominal cavity was another point I would like to have heard more about. The abdominal cavity undoubtedly furnishes infection for tubes in a large number of cases by the so-called Menge's wave. The conflicting opinions about the direction of the wave of the tubal ciliæ are being reconciled somewhat by present-day authors. But the fluid wave of Menge undoubtedly occurs, and by it floating bacteria gain access to the tubes, and there find lodgment.

I recently took out a pus tube from a woman, with a little line of plastic material passing up to the end of the appendix, show-

ing the line of Clado's ligament This patient had had two attacks of marked appendiceal pain. The case had been diagnosed as appendicitis. The tube was drawn up out of the way, so that it had been impossible to make a diagnosis of the implication of the tube.

Another point is with reference to the gonococcus. Recently I saw a case in which the gonococcus was found close to the peritoneal surface. The gonococci were easily seen in stained sections.

DR. ANDREWS (closing the discussion).—I have very little to say in closing the discussion. I take it, the routes of infection, primarily, are four. There is a possible route of infection from some far-distant source, some through the blood supply or lymph channels. I say far-distant to distinguish between the passing of the infection simply through the uterus into the broad ligament and into the tube, as in puerperal infection. It is possible we may get long distance infections as we do in other diseases, getting new foci of pus infection. But the vast majority of pus tubes or of salpingitis are produced by direct infection from the uterus or from the abdomen through the abdominal ostium, and when infection takes place from the uterus it may pass directly into the tube by way of the uterine ostium, and perhaps this is a more frequent way in gonorrheal cases. It may pass, especially in septic cases, from the tissues through the tube—a short cut through the lymphatics. I think it will be found that septic infection through the peritoneal cavity from the bowel is not at all uncommon. It has happened to me within three weeks to have three cases of appendicitis and salpingitis in the same patients, and the laboratory history of these three cases is this: In one there was a single pus tube with staphylococci in the pus; and there was an appendicitis without perforation. In a second case there was the colon bacillus in the pus of both tubes; there was an appendicitis with many adhesions to the appendix and to the surrounding gut, but no perforation, and a dry condition of the abdomen—that is, no ascitic fluid.

I had another case in which there was no perforation, but merely adhesions of the appendix, in which there was a very large amount (quarter of a cupful) of fluid in the peritoneal cavity gravitating into the pelvis, and in which there was a double salpingitis, both tubes being simply swollen, and bathed with this fluid, but unfortunately I did not make the examination. I have every confidence that if I had done so, I would have found the colon bacillus, because of the connection of the appendix.

I speak of this to give a reason why in reading the paper I ventured the prognosis that we would find in the future more cases containing the colon bacillus than have been found in those cases where the attention of the operators has not been so thoroughly called to that particular organism. Since I have made this table, I have found a few more cases, and one operator has presented thirty-six cases, four of which had the colon bacillus.

DR. CHARLES B. REED read a paper entitled

ETIOLOGY OF ISCHURIA IN RETRO-FLEXIO-VERSION OF THE UTERUS.¹

DR. CHARLES S. BACON.—Mr. President: The theory that has been announced by the writer of the paper is interesting, and undoubtedly there is something in it. The question is to prove it. Is it a fact that there is a paralysis of the bladder wall, or a lack of function of the afferent and efferent nerve fibers in these cases? How can that be proven? Is it not true that there is contraction of the bladder in these cases of retention? I do not know whether the onset of the ischuria is always as sudden as claimed by the author. I suspect that there are two or three factors which may act together or separately. I do not believe we can eliminate entirely the occlusion of the urethra to a greater or less extent, either by means of pressure in some cases, or by means of edema of the tube in others. These factors probably have a bearing as well as the explanation given by Dr. Reed.

DR. GUSTAV KOLISCHER.—I am glad that Dr. Reed supported the statement I made some ten years ago, that the condition of the bladder in retro-flexio-version of the pregnant uterus is not due to mechanical intrusion of the urethra. In all the cases I have seen it was easy to pass a soft catheter into the bladder, thus demonstrating that there was no mechanical compression of the urethra. So far as the observation of these cases goes, it is very important to state expressly one point. Retention and paradox incontinence do not set in suddenly, as will be discovered by investigation of the histories of the patients, who first have trouble in starting the flow of urine and have to use abdominal pressure in order to maintain it. These difficulties increase gradually and permanently until some day complete dysuria sets in, and that is the time the physician is called in. Examination of the bladder by inspection through the urethra at any time during incarceration of the uterus will show edema of its walls, and these will be found by palpation to be thickened. This edematous condition remains for some time until all the circulatory disturbances are smoothed out. If the theory that these disturbances are due to tropho-neurotic influences be true, certain facts cannot be explained. Disturbances of the bladder function occur also in cases of large tumors if they become incarcerated. What does that mean? A certain disproportion between tumor and the bony pelvis is brought into play. The result is circulatory disturbances, and it is by no means necessary that the tumor should fill the pelvis, or press against the sacrum in order to create bladder trouble.

It would be hard to prove the pressure on the peri-cervical ganglia which the essayist claims is the cause of all the disturbances. It would be strange that if these ganglia were interfered with there should be a selective preference for the bladder, and no pathological changes in the uterus. That all the changes actually take place only in the bladder, and not in the uterus, is such a

¹See original article, page 145.

well-known and striking fact that the French obstetricians say in a case of retro-flexio-version of the pregnant uterus, the bladder is everything and the uterus nothing. By comparing the condition of the bladder in individuals suffering from spinal troubles so that the bladder is partially or totally paralyzed, we find another point militating against Dr. Reed's theory. In these cases, no edema and subsequent gangrene of the bladder wall is observed, and the nutritive changes are so insignificant that there is still a diversity of opinion among the surgeons whether such patients ought to be regularly catheterized. Another point is that tropho-neurotic changes due to pressure will keep on for a certain length of time; they will run a certain cycle even after the pressure has been relieved. But that is not the case in the changes occurring in a bladder injured by the retroflexion of a pregnant uterus. The destructive process stops and reaction takes place at the very moment the uterus is replaced in its normal position. That changes in the bladder in these cases are not due to tropho-neurotic influences is probable for another reason—viz., the bladder recovers its function in a very short time after the uterus is replaced, which would not be the case if all the destructive processes were due to influences originating in the nervous centers.

Of course, theories dealing with neurotic influences will always be of more or less speculative character. The same is true, with reference to Zeissl's theory, for instance. All his speculations as to the excitement of urinary calls are easily refuted by simple observations of every man who pays slight attention to the phenomena in his patients. We have, furthermore, to keep in mind that the application to human beings of the results of experiments conducted on animals is always a rather precarious method.

DR. REED (closing the discussion).—The reason for selecting the subject of my paper is to be traced to the fatigue arising from seeing constantly in the text-books reiterations of the statement that the "ischuria in retroflexio-version is due to compression of the urethra"—a statement that has been made and repeated until it passes current without adequate support.

I agree fully with Dr. Bacon that to prove my position is impossible at the present time. I believe it is demonstrable that the ischuria is not due to compression of the urethra, except in an extreme minority of the cases. In regard to Dr. Kolischer's statement about incarceration, we can only say that incarceration is a definite aid to the production of ischuria through the fixation of the tumor mass, with the result that it is thereby forced down upon the pelvic nerves—which would occur differently or vary in time if the mass were not fixed. It is essential for my theory only that the nerve be compressed in some part of its course, either by the tumor itself, or by the intervening tissue, and the intervening tissue produces the result very easily if it is pushed down upon the nerves by the distant tumor mass or by an unusual congestion or circulatory disturbance in the pelvis.

RUDOLPH W. HOLMES.

Editor of the Society.

TRANSACTIONS OF THE WOMAN'S HOSPITAL SOCIETY.

Meeting of November 24, 1903.

The President, J. RIDDLE GOFFE, M.D., in the Chair.

DR. HERMAN GRAD presented a specimen of
OVARIAN ABSCESS.

The patient is thirty-two years old, had been married seven years. Had no children. She was seen on the 16th of August. Five weeks before she had suddenly ceased menstruating, having been exposed during bad weather. She was suddenly taken with great pain in the abdomen. Temperature ran between 99 and 100°. A physician was called in who administered two hypodermic injections of morphine before quieting the pain. The menses returned six days later. Since then she has flowed off and on. I thought I might be dealing with a case of ectopic gestation, and asked to be allowed to examine her under an anesthetic. I found a mass on one side of the uterus. In cutting down on it, it showed a double pyosalpinx, this ovary considerably distended and a small ovarian cyst on the other side. Drainage was placed posteriorly, the gauze being removed in five days. A small piece of the ovary is left which carries on the function of menstruation. I present the specimen to get suggestions as to whether it is ovarian abscess or not. Microscopic examination of the contents showed epithelial cells mixed with pus cells, and an entire absence of micro-organisms.

DR. GOFFE.—I think from the history it was a case of long-standing infection. It is quite possible the pus had become sterile. The cessation of menstruation lit up an inflammatory process that caused the immediate symptoms.

DR. JAMES N. WEST.—I had occasion to investigate about a year ago, the literature of bacteriological conditions found in tubes. It was found that at the time of operation only 40 per cent. of pus tubes contained living organisms; all the rest were sterile, so it would be nothing unusual to find, especially in old conditions, collections of fluid which contained no organisms. Dr. Grad is to be commended for the course he took in draining the pelvis. Nobody could tell whether or not this case was one of the 40 per cent. with organisms, or of the 60 per cent. without.

DR. LEROY BROWN.—The specimen is one of

ECTOPIC GESTATION,

about six weeks, and ruptured. The patient was thirty-one years old, had been married seven years. No children, though they

were desired. She had missed one period for the first time in her history, and ten days after missing it she began to flow; the flow was attended by violent, colicky pains, leading her physician to infer that the condition might be one of ectopic gestation. I was asked to see her.

Examination gave the abdomen as perfectly flaccid. On the left side was a hard, enlarged sclerotic ovary. On the right side where the pain was, there was nothing to be felt, other than a vague feeling of fullness. There was no other history typical of ectopic gestation. Pulse good. A tentative diagnosis of ectopic gestation was made, and it was advised that the patient should be given the benefit of an exploratory operation. After consultation with one of our confreres, the exploratory operation was done. A ruptured tube and eight ounces of free blood was found in the abdomen. The ectopic gestation was on the right side. The ovary of the right side was healthy. The ovary on the left side, being diseased, was removed, the healthy tube of this side being left in. The tube of the right side, the seat of the ectopic gestation, was removed, the healthy ovary being allowed to remain, the left healthy tube being stitched to the right ovary and the abdomen closed. The patient made an uneventful recovery.

The object of reporting this operation is to bring out some expression of opinion on the advisability of emptying the gravid tube and allow it to remain. This procedure, now advocated by prominent operators abroad, I cannot regard in any other light than that of an experiment. To leave a tube once the seat of an ectopic gestation seems to me risky, inviting the possible recurrence of the trouble at a later period, since it is recognized that the lumen of such a tube does not become obliterated, but remains patent.

DR. GRAD.—If tubes, the seat of diverticuli, invite the occurrence of ectopic gestation, then I see no reason why a tube once the seat of gestation should be allowed to remain. The same diverticuli may be the etiological factor of another ectopic.

DR. MCGINNIS.—I wish to ask whether recurrence of ectopic gestation in the same tube is usual and customary in the experience of the members of this Society?

DR. GOFFE.—I know of only one case in which the tube was evacuated and left. The subject at present is simply a matter of hypothetical opinion.

DR. JANVRIN.—It has been my custom to remove the tube. It is generally in a dilapidated condition. I had never supposed anything would be gained by leaving the tube and ovary. Many persons leave the ovary, and perhaps it is better policy. No trouble can result from that. As for the tube, I have always removed it. However, if the tube should be left, after having been thoroughly cleansed, and perhaps *the edges sewed together with catgut*, I see no reason why it should not in time become per-
vious. Under ordinary circumstances I think the tube might be

left, and I don't believe that the probability of another pregnancy in that tube is so great as to militate against leaving it. In my own experience I have never had a case of recurrence of tubal pregnancy; that is, a second pregnancy in the other tube. I should be inclined to adopt the measure suggested to see what would be the result. I should, however, bring the cut edges of the tube together; it would then be left in better shape and in better condition for function afterwards.

DR. CHURCHILL CARMALT.—The occurrence of ectopic gestation has been reported where the tube has been removed, the gestation taking place outside of the uterus. In one case the uterus was removed. This would leave the impression that the radical operation was no better than repairing the tube. The question would be whether the bleeding of the tube would be sufficiently severe to warrant its removal on that account. If it can be cleansed readily, I see no reason why it might not be left.

DR. E. E. TULL.—I did the same operation Dr. Broun describes (removal of tube, leaving ovary), seven or eight years ago to keep up the menstrual function. I should not leave the tube. I should remove the diseased ovary where the other ovary is healthy.

DR. JOSEPH C. TAYLOR.—I can tell you the history of two cases pertaining to this, seen with Dr. Pryor. They were very small tubal pregnancies occurring in the middle third of the tube. In both cases the tube was opened and left. No suturing was done. There was not much, if any, hemorrhage at the time. Perhaps there was a little oozing in the edge. Both did well. We put a little gauze drainage down through the cul-de-sac. Whether there was another tubal pregnancy, I don't know. If so, we never heard of it. One occurred three years ago, about this month—before the holidays. The patients did well, so far as the operation was concerned. There was no temperature. They were not far advanced tubal pregnancies—fifth or sixth week. Hemorrhage had occurred. Blood clots were found in the pelvis.

DR. CLEVELAND.—The proposition is an attractive one, but we must wait for experience to decide that point, as to whether there is danger in leaving the tube. When I first read of these cases I felt I would adopt the plan at once, if such a case occurred in my practice. In reasoning about it, one can readily see that there ought to be no trouble following the operation done in that way. I think certainly if I have an opportunity, I shall adopt the method.

DR. GOFFE.—I think it a very proper and conservative rule to leave the tube. I spoke of a case at the last meeting, in which there was a simple pin-hole puncture. The hemorrhage stopped, but the pelvis was full of blood. The opening was blocked by a little clot. I had difficulty in finding where the blood came from. The placental attachment was there. The ectopic gestation occurred in the middle third of the tube. I think if I had such a

case again I would open the tube, empty its contents and either stitch up the incision or leave it. The more conservative work I do on the uterine appendages, the more faith I have in nature's recuperative powers, especially in this field, and I see no objection whatever to opening the tube, emptying its contents and leaving it for future functions. Thus far the experience has been very limited. We have little to base our opinions upon, and yet I think in the very near future we will have many cases reported such as Dr. Taylor has given us. The fact that so many women who have an ectopic pregnancy and have had the tube removed suffer from a secondary tubal pregnancy of the opposite side is very significant of the etiology of the condition. It may be due to an error of development in which some of the characteristic cells of the endometrium have been misplaced and developed in the tube, thus catching the ovum and developing a rudimentary placenta.

DR. TAYLOR.—Dr. Janvrin suggested suturing. Once the tube is opened to clean it, the incision could be carried through, but would you consider it necessary to use the coaptation stitch?

DR. GOFFE.—We know that Martin, of Berlin, makes fenestra in closed, occluded and enlarged tubes, leaving them, instead of amputating them. Why may we not take advantage of this fenestra made naturally by rupture and allow the communication thus established between the ovary and the uterus to remain?

DR. JANVRIN.—I spoke of the propriety of sewing up the rent. In all probability both ends of the tube, proximal and distal, are patent at the time of operation. The object of sewing up the rent is not so much to control hemorrhage as to put the tube into good shape. If patent, to allow it to remain so and give it a better chance for future function.

DR. GOFFE.

FIBROID TUMORS.

This tumor was removed from an Italian forty-three years of age, who had been suffering from excessive menstruation for nearly a year, and from continuous hemorrhage for about six weeks. I made a diagnosis of fibroid tumor and subjected her to laparotomy. On opening into the abdominal cavity and getting a view of the uterus I had quite a shock, for I never saw a uterus that so perfectly resembled a four months' pregnancy. It was extremely congested, the blood vessels large in every direction, very symmetrical. Indeed, I was not able to convince myself it was not a pregnancy until I had delivered the tumor through the abdominal incision. By getting the uterus between my hands and examining it carefully, I satisfied myself it was not a pregnancy. I did a supravaginal hysterectomy and the woman made an ideal recovery. On opening the uterus, there presented this submucous fibroid which on microscopic examination showed colloid degeneration coextensive with the tumor. It illustrates the unusual condition of complete colloid degeneration. On passing the finger around the tumor, I found that it grew from the

posterior aspect and was adherent to little more than half the entire space of the interior of the uterus; another illustration of the frequent degeneration of fibroid tumors. In this case one ovary was left. Both tubes and one ovary were removed with the tumor. The only hemostatic used was the angiotribe on the broad ligaments from above down until the bladder was reached. The bladder was dissected off and a flap of peritoneum made posteriorly. The angiotribe was then passed down inside the flaps, near to the cervix, the uterine arteries were compressed, not cut away, and the flaps brought together over the top.

The second specimen is a solid fibroid removed by myomectomy from a woman thirty-eight years of age. She had been married for twelve years. Had never been pregnant. There was an estate hanging upon an heir, and she applied to the doctor who sent her to me for relief of sterility. She had been complaining of obstructive pain in the rectum and in the back part of the pelvis for over a year. On examination I found (she was a very fleshy woman) a large mass that rose out of the pelvis, having two protuberances upon it; this specimen being one, and the fundus of the uterus being the other. I was not able to distinguish between the two, and subjected her to laparotomy. I found that the tumor had an extensive attachment beginning one centimeter from the fundus and extending very low on the posterior wall of the uterus, dissecting its way down between the vagina and the rectum until it reached well down on the posterior vaginal wall. I split the capsule along the middle line posteriorly, and shelled out the tumor. There was no little difficulty in getting the tumor out; it was firmly adherent, and in going down into Douglas' pouch, I made a tear in the rectum. The bed of the tumor was closed with layer sutures of catgut and the rent in the rectum sutured with chromic gut. A gauze drain was placed in pelvis, coming out in the vagina, and a second piece of gauze on top of this coming out through the abdominal incision. The patient's bowels moved the third day without trouble. I then drew the upper piece of gauze out of the abdominal incision and found no trace of fecal matter. The gauze drain in the vagina was removed gradually, day by day, till the seventh day, when the last of it came away. There was no fecal matter in the drainage at any time, but there was a strong fecal odor and an abundant amount of pus. I thought the fingers, from breaking through into the rectum, must have carried colon bacilli into the wound on the posterior face of the uterus, and that it was from that infection the odor came. I therefore inserted a through and through rubber drainage tube from the abdominal incision into the vagina and out at the vulva. One day in straining at stool the patient strained the tube out, and she was put under an anesthetic in order to have it replaced. This was two weeks after operation. In opening the abdominal incision to pass the finger in, I came immediately in contact with, and detected, through the rubber

glove I wore, two gauze wipes down behind the uterus. I drew them out. They were not imbedded in exudate, not adherent to anything. They simply lay there in the bottom of the cavity. They were very foul and the discharge coming through the abdominal wound and vagina was extensive. The tube was replaced, and the wound healed readily. The advantage of through and through drainage was very apparent in this case.

DR. JANVRIN.—If I have any doubt as to the size of attachment I dilate the cervix as much as possible and examine with the finger, and ordinarily pass a sound. I have never seen any trouble from this procedure. The question occurred to me as I looked at the specimen, whether, if the cervix had been dilated and a finger passed up into the uterine cavity, the attachment of the tumor would not have been discovered and then possibly it could have been enucleated through the vagina. At the age of this patient it would hardly have been necessary to do it, but in a *young* woman, single or married, before operating I should have tried that method of examination as well as others in the hope that I might deliver it through the vagina, and so save the uterus.

DR. BROWN.—Dr. Goffe is to be congratulated on the happy outcome of his second case. This accident might occur to any of us, and if it has not occurred it is no reason why, at some time, it may not happen. The unintentional leaving of gauze in the cavity generally have for a cause some excitement on the part of the assistants or operator during the operation brought about by profuse hemorrhage. The only way of which I am aware that such an occurrence can invariably be known before the abdomen is closed is for the operator to insist on using only gauze wipes, the number of which has been previously recorded, and of gauze pads, having attached to one corner a tape to which a clamp has been fastened. The number of each of these is known before the operation, and all must be accounted for before the abdomen is closed. My own rule is never to pass in the abdomen anything but the taped pads. If hand wipes are used in profuse hemorrhage they are never permitted to leave the hand of the one using them. Before the abdomen is closed, the nurse must account for all pads and wipes.

DR. WEST reported cases of

FIBROID UTERUS AND APPENDICITIS.

CASE NO. 1.—Mrs. L., age forty-seven years, widow, has been married seventeen years; never pregnant. Entered Post Graduate Hospital July 2, 1903. General history: Father died of heart disease; age at time of death not known. Two aunts on father's side died of tuberculosis. Mother's history not known. Had the usual diseases of childhood, including measles and scarlet fever. Between the ages of five and thirteen years was under the care of physicians, but does not know for what malady she was

treated. At the age of thirteen years she had a fall on plank, striking the region of the vulva, but does not remember to have been seriously injured. Has had difficulty in passing the urine for thirteen years. Had to be catheterized for several weeks in 1891. In 1900 had a very severe attack of bronchitis which gradually disappeared. No history of specific disease. Periods regular every twenty-eight days. Duration of flow, three to six days. Pain in the pelvis, nausea and severe headaches. She has recently been totally unable to void urine voluntarily and has had to be catheterized. This became more and more difficult until she went into the hospital on account of having to use the smallest sized baby catheter and the great difficulty of passing this.

On entering the hospital the patient weighed about ninety-five pounds. The complexion was sallow and the general nutrition poor. She had a slight cough.

Physical examination of the heart, lungs and abdomen was negative. Pelvic examination showed a small peculiar whitish looking growth occupying the lower part of the meatus urinarius, projecting forward about one-third of an inch. Examination of the urethra showed the presence of a tight stricture just anterior to the neck of the bladder. Vaginal and bimanual examination revealed the presence of a dense myofibroma the size of a grape fruit developed in the anterior wall of the uterus and pressing hard against the bladder.

On July 11th the patient was operated upon before the class. The growth upon the meatus was cut away and the denuded surfaces stitched together with catgut. The stricture of the urethra was gradually dilated, continuing the dilatation until next to the largest sized Kelly dilator was used. Then supravaginal hysterectomy was done. The operations consumed one hour and fifteen minutes, and the patient was put to bed in excellent condition. Her recovery was uneventful and she left the hospital on July 29th, eighteen days after the operation. Her general condition, however, was poor, and I believed that she would build up better outside than in the hospital.

In the second week in August she came to my office. Her appearance was most miserable. She had a constant hacking cough almost continuous, fever and chills at irregular intervals. Examination showed the urethra healed and healthy looking. She passed her water without the slightest difficulty and the pelvic condition was excellent. Examination of the lungs showed the apex of the left lung, the infra and subclavian areas on the left side to be extensively solidified. Examination of the sputum showed the presence of tubercle bacilli. She was at once placed on Russell's treatment for tuberculosis.

She reports to me from time to time for direction of the treatment. Her last call was on November 20th, at which time her weight was 117 pounds, a gain of 22 pounds over her weight when she first entered the hospital. All chills and fever have dis-

appeared for more than a month. Cough has entirely disappeared and only the slightest traces of any disease may be found in the involved area of lung.

The patient feels quite well now, and is earning her living at her trade of dressmaking.

The next case is one which would not be suitable to report to a society which held strictly to diseases of women, but our work inevitably leads us to abdominal surgery, and I believe that the gynecologists of the future will include this work in both men and women in their specialty, and that gynecology and abdominal surgery go hand in hand and offer a sphere legitimate and not too broad for a specialist.

CASE NO. 2.—Mary J., age twenty-six years. Duration of illness eleven years. Came to my office October 27, 1903. Referred by Dr. W. J. Morton, Neurologist to the Post Graduate Hospital. Family history: Father died of some throat trouble which required tracheotomy. No sisters or brothers. Mother living and healthy. Mother's father died of hemorrhage of the stomach, aged sixty-nine years. Mother's mother died at seventy-two years. General history: Periods normal and regular, first appeared at fourteen years, flows four days; no pain. At one and a half years of age had spinal disease in the region of the seventh cervical vertebra; received treatment; wore a brace three years and entirely recovered. Had measles and malarial fever in her seventh year. At eight years of age passed a stone as large as a pea in the urine and was confined to bed several days. Eleven years ago was suddenly seized with a severe attack of pain in the right hypochondrial region. She was able to be up the next day, having still a feeling of soreness in the region of the gall-bladder. Similar attacks came on at irregular intervals, the time between ranging from weeks to months. No fever or jaundice accompanied them, only severe colicky pains lasting for a short time and leaving a feeling of soreness in the region of the gall-bladder. As time went on the attacks became more frequent and more severe. The pain always started in the upper part of the right lumbar region and radiated toward the region of the gall-bladder, where it settled. The pain was very severe for a few hours and was relieved only by opiates. After passing of the attack, she felt perfectly well except for the lingering soreness in the gall-bladder region, referred to above. The last severe attack was September 1, 1903.

The patient's general appearance is good weight 117 pounds.

Her diet is an average one, but the appetite very poor, eating only two meals a day. Drinks water in moderate quantity and coffee twice a day. The bowels are constipated, having to take medicine to secure a movement.

Examination of the urine proved negative. During attacks, passes water about every hour but has no pain in passing it.

Physical Examination.—Heart and lungs negative. Liver

slightly below the free border of the ribs. No mass in the region of the gall-bladder. Moderately movable right kidney. Deep pressure over the region of appendix causes a feeling of soreness which runs up toward the umbilicus.

Pelvic examination negative, except for the presence of a very small fibroid on the fundus of the uterus.

Diagnosis.—Chronic appendicitis with movable right kidney.

The patient had been seen by several physicians, at least two of whom had made a diagnosis of gall-stones. November 17th I operated upon her as follows: At first an incision was made over the region of the gall-bladder. This region was carefully examined, the hepatic and cystic ducts and the ductus communis choledochus were carefully palpated with negative results, except that the gall-bladder was smaller and more deeply situated than normally, and the right kidney appeared to have glided down almost to the iliac region. The wound was closed and a gridiron incision was made over the region of the appendix. Upon drawing forth the cecum it appeared much congested and engorged. The appendix, however, did not appear to be much diseased, but it was removed, and upon being cut open later showed what appeared to be a small ulcer near its base. After closure of this wound the patient was turned upon her abdomen and the right kidney fixed by a slight modification of Edebohl's method. The whole time consumed was one hour and fifty minutes and the patient was put to bed in excellent condition. Her recovery thus far has been most satisfactory, the temperature having barely reached 100° at one time. I am now inclined to believe that the movable kidney was a very important factor in her case, if not responsible for the whole trouble.

The displacement of the kidney appeared slight before anesthetic was given. Afterward it was plainly observable in the right iliac region.

DR. CHARLES E. TAFT.—Why the second incision over the appendix if the second operation was in mind when the first incision was made? Why not one incision for both operations?

DR. WEST.—That is done by an eminent surgeon, but with such difficulty, even by him, and with such apparent danger, that I think it better to make an incision directly over the appendix. It seems to me like going in a very indirect manner after something that can be very easily gotten at in a direct manner.

DR. TAFT.—I think it depends a great deal upon the size of the patient. I have done the operation once; the incision had to be prolonged, perhaps, a little more than usual, but the scar was not very lengthy. It was easy to reach the appendix through that incision and attend to the kidneys also.

DR. CARMALT.—One can usually reach appendix and kidney through the lumbar incision. In a great many cases the appendix seems to be quite free from firm adhesions.

DR. BROWN.—I would like to ask Dr. West about shadow pic-

tures of gall-stones. I was of the opinion that gall-stones cast no shadow.

DR. GRAD.—I would like to have Dr. West describe the location of the urethral tumor more in detail, telling how the mechanism of urination was disturbed by it; whether it was simply by ball-valve action, or whether it obliterated the urethral canal itself?

DR. WEST.—In regard to the incision over the appendix, it was simply and quickly made. I don't believe I shall ever adopt the method of extending the incision down sufficiently to remove the appendix and treat the kidney at the same operation. One never knows, until the opening is made, what sort of case one may find. I think it much easier to make the opening over the appendix.

In regard to the radiograph of gall-stones, the ability to make a picture depends upon what the stones consist of. I have looked up a number of cases and find that when they are composed of animal products, no shadow is cast. When mineral matter has been deposited, in some cases they do cast a shadow.

In regard to the Russell treatment for tuberculosis, it is a work that Dr. Russell took up at the Post Graduate Hospital several years ago. He found that the majority of tuberculous patients objected to fat, but that fat was good for them. He experimented with various fats, and finally adopted the idea of making emulsions of mixed fats, none of them cod liver oil. The general rules of hygiene are strictly observed, windows open at night, rooms well ventilated, patients to spend as much time as possible out of doors. In addition, he gives them raw eggs, beginning with one at each meal, to the number of six at each meal, making eighteen raw eggs a day, stirred up in milk.

The keynote of the treatment is to keep the bowels well open. If there is disturbance of the stomach caused by taking so much fat, he gives them a mixture of calcium chloride, which modifies the symptoms.

I have tried this method on four tuberculous cases. Every one has been markedly benefited. One has gained thirty pounds. Dr. Russell has reported a number of authentic cures.

DR. CLEVELAND.—What is the theory of that?

DR. WEST.—The reason that the tuberculosis bacillus takes hold of a patient is that in the individual there is a lack of resistance to the attack of the germ, probably caused by malnutrition or the lack of certain carbohydrates in the food.

DR. CLEVELAND.—How about fat people who have tuberculosis?

DR. WEST.—It does not matter how fat the individual is. It is a question of lack of absorption of those carbohydrates.

DR. GRAD.—I wished to hear about the urethral tumor.

DR. WEST.—The tumor had nothing to do with the urethral stricture. When I passed the sound on first seeing the patient,

the part where the tumor was, was perfectly patent. The stricture was slightly anterior to the neck of the bladder, entirely independent of the urethral tumor, and independent of the fibroid.

When a little girl, she had fallen and hit that part of her body on a plank. There was no history of specific disease. I think her stricture due to this injury she had when a child.

DR. GOFFE.—I am by no means unappreciative of the honor done me in electing me to the Presidency of this Society, and I thank you. The Woman's Hospital Society ought to be a powerful influence in our specialty but it has seemed to me to lack something of the dignity and influence it ought to possess. It has traditions and, in a way, it has taken upon itself the mantle of the great teachers we had at the Hospital, and will carry forward the work in a distinctive way.

The Transactions should bear upon their face a certain evidence of progress along the line of our instruction, and we should speak here with some authority in this particular field. We cannot all be geniuses, we cannot all place new lines of work in this well-trodden field, but there are a great many points in gynecology at the present day still unsettled; old questions, but they are questions on which the teachers in this specialty throughout the country do not agree, and there are many differences of opinion even in our own ranks.

We might take up ad seriatim some of the points and fight them out in our own little circle to a finish and if possible come to an agreement in regard to them and let that go forth as an authoritative opinion.

The Society should bear the torch in this line of work and light the way in the matter of coming to a positive conclusion in regard to old questions and also in studying and settling the new ones.

Meeting of December 22, 1903.

The President, J. RIDDLE GOFFE, M.D., in the Chair.

DR. LEROY BROWN.—LARGE PAPILLOMATOUS CYST.

The patient was a woman of 52; she had one child, and passed the menopause four years previously. I saw her on the 3d day of May last. She suffered no pain, but 2 years ago she noticed enlargement of her abdomen. As soon as she became aware that she had a tumor, she went from doctor to doctor, attempting to have it dissipated by various kinds of treatment.

The tumors were removed without difficulty. The larger one was tightly imbedded in the pelvis. It was shelled out, after which the second tumor made itself felt and was removed. The patient made an uninterrupted recovery and is now perfectly well, so far as I know. The last time I saw her, a month ago, she had no evidence of any return at all, but I am doubtful whether she will be absolutely cured. It is for the pathologist to decide the questions of the malignancy of the growth. There was nothing left behind

in the pelvis. I would be glad to have members of the Society express themselves as to the possible recurrence of the growth.

The second specimen is a

FIBROID TUMOR

springing from the uterus, in which supravaginal hysterectomy was done, and both tumors removed. Fibroid developed in the left broad ligament. The patient made an uninterrupted recovery. I did not attempt myomectomy for the reason that she desired everything removed. She wished to have no ovaries, no uterus; she wished to be absolutely sure there would never be any recurrence. I brought the edges of the broad ligament together, and caught up the connective tissues here and there to obliterate all dead spaces. The cervix was sewed up, anterior flap brought down over the posterior portion. The patient made an uninterrupted recovery.

DR. GRAD.—Is not it possible that the tumor is not malignant, even though papillomatous. It might be benign, histologically of a papillomatous structure. These tumors usually are malignant, but in the absence of a microscopic examination we cannot tell; it may be benign. It is very interesting to note that both ovaries are involved. This may point to malignancy, the growth having spread from one ovary to the other.

DR. GOFFE.—It seems that the growth has originated in the interior of each one of the ovaries. The small tumor has considerably more of growth indicating malignancy than the other. It would seem to have arisen from the interior independently. There are two distinct growths.

DR. EMMET.—A case presented itself last January, showing an abdominal tumor, in a young married woman of 26, nullipar. I took it to be an ovarian tumor of the right side, size of crown of derby hat. I operated shortly, and found the tumor of the type, as we diagnosticated it, and with a great deal of serum in the peritoneal cavity and with a growth similar to this—like sea weed—or an anemone, springing from the ovary of the left side. There were masses floating about showing exuberant heads and the disease was evidently spreading rapidly. I thought the woman was doomed to speedy death and I closed the abdomen, thinking I would let her enjoy her short life rather than risk great loss of blood, and consequent shock. She made a speedy recovery and I kept her under observation. She gained strength rapidly. I then put her under treatment of X-rays and persisted with this for several months. Going away in the summer, I said I should feel more satisfied to explore it again and remove what was possible. She had been losing in weight, and the fluid I had left in the cavity had been absorbed to some extent, as she was not as large as formerly.

I opened the abdomen, and took out the tumors of both sides. They were both papillomatous ovarian cysts. The floating masses had not increased in volume beyond what I found at first, still I gathered up handfuls, tore off all I could with my finger tips, and

emptied out quarts of bloody serum. There was naturally considerable bleeding. I then used a 50-per-cent. solution of the peroxid of hydrogen in abundance. This acted nicely as a hemostatic. I then washed the cavity with saline solution, leaving in all the abdominal cavity would hold. I did not prolong the operation unduly. She left the institution in three weeks greatly improved. I put her again under X-ray treatment. She had gone down to 116 pounds in weight from 128 in January last; she now weighs 143 pounds, and I find no sign of any growth whatever nor of any fluid in the cavity. I believe she is well of it. I see her once a month to note if there is any recurrence. Whether it be the atmospheric air that had a good effect, whether peroxid of hydrogen or whether X-rays are the prime factors in the improvement, I cannot say. I continue this treatment feeling that, at least, no harm can come of it. I am willing to admit that it does some good, though it is still a sub judice question. We know that internal growths are not readily affected by X-rays, although, I am sorry to say, I heard of a New Hampshire man who told a patient consulting him, that she had abscess of the ovary and he would like to turn the light on for three weeks.

I still feel a little bit of hopefulness from the beneficial use of it. In patients situate like this one, I would again make use of the same means. I think that there have been some modifications produced by it.

Another tumor similar to the other specimen of Dr. Brown I presented a few nights ago at the Obstetrical Society. The patient was a woman of 48, single. This is much smaller than the original specimen—about two-thirds of it. It developed entirely on the posterior face of the uterus. The uterus was atrophied; she had reached the menopause five years ago. The tumor had been giving her pain for the past year; she asked for its removal. Rather an interesting specimen for that age and under such conditions.

I have here a specimen of intraligamentary fibroid. Size of three cocoanuts and a couple of oranges. It has diminished considerably in volume as we constantly see in formalin. It was removed from a woman of 30. It has interest in that all this mass has grown from cells which may be filaments of the uterus, or they may be of the structure of the broad ligament. It lay mostly in the broad ligaments, though the large mass at the back reached up under the liver.

Upon examination I could feel the uterus, but not the cervix, consequently there was no chance of exploring the cavity. I left the broad ligaments, tubes and ovaries; they were quite large, congested and full, but healthy. I have not been able to feel them since; the patient left the hospital after four weeks.

This is then an intraligamentary fibroid springing from the muscular fibres of the broad ligament or from the lower edges of the uterine body here and there; the cervix is not involved. One other point in connection with it: I would enjoin upon all to examine the pelvis per vaginam after such an operation. Before

the patient left the hospital I was pained to find a nodule up in the pelvis of about the size of a walnut that I did not get out. I am somewhat anxious, as the microscope shows the specimen to be already undergoing myxomatous degeneration. In cutting it, it was like lung tissue.

DR. GOFFE.—The etiology of fibroid tumors is still involved in mystery. We could talk all night upon this subject without coming to any conclusion. In Dr. Broun's case we have an interesting point and that is, how far we should yield, ordinarily to patients' requests in regard to operating; whether under the circumstances described we ought to make a clean sweep of everything in the pelvis, or whether we should persuade the patient to allow the surgeon to use his own judgment in preserving such organs as prove to be healthy and save her, for instance, from the storms following sudden cessation of menstruation. This question, in a woman of 36, is a point for consideration.

In regard to drainage, Dr. Emmet has made the point in a case similar to Dr. Broun's—multiple fibroids of the broad ligament—that dead spaces might be left in the broad ligament and give rise to subsequent trouble. The question arises: Is it not wise, under those circumstances, to employ drainage *per vaginam*?

DR. GRAD.—The specimens of Dr. Broun and the remarks of Dr. Emmet are certainly very interesting. There have been many reports about the peculiar physiological action of the X-rays on growths of various kinds and these reports are pressing for verification.

About a year ago I became interested in the X-ray simply as an aid in diagnosis. Some cases soon presented themselves where the X-ray treatment had been applied. A case of sarcoma of the uterus came under observation thirteen months ago. The case was seen by two prominent gynecologists in Brooklyn, and pronounced inoperable. At that time I was very sceptical that good could be done in a case of that kind. I treated it very carefully, and kept records of it. I did not know at the time that I was dealing with a sarcoma. In six weeks' time it was remarkable how movable the uterus became, instead of being firmly fixed. The cervix was destroyed by the malignant process, but the uterus became movable; the patient, however, developed a profound toxemia. Finding the uterus movable, I persuaded her to let me do hysterectomy. I removed the uterus and appendages and as much of the malignant process as I could, and closed her up, put in drainage. She promptly recovered from the operation. The vaginal and abdominal wounds healed and every symptom disappeared. The pathologist reported that the growth was sarcoma, not carcinoma. In eight months the process returned in the scar. She was again subjected to the X-rays, and is going along fairly comfortably. Under the action of the X-ray the process is not extending.

This brings up the important question—what is the physiolog-

ical action of the X-ray in malignant tumors, and how far can we apply it, as far as practical results are concerned. In this case the woman has been kept alive thirteen months. She is not cured, yet gets along comfortably; there is no vaginal discharge, simply the scar in the vagina feels hard and somewhat painful. She takes two treatments a week and she is comfortable.

In various other cases I have found the action of the X-ray on tissues very interesting. For instance, I had a patient who presented a tumor in the parotid gland; probably a benign growth, but I can not say. The patient refused operative interference, and I could not get a specimen, but under the action of the X-ray this tumor has entirely disappeared. Certainly there must be some very decided physiological action in this agent. We cannot tell what it is. Radium seems to have the same physiological action as the X-ray. A case of epithelioma of the tongue in which this has been applied, has improved to a very remarkable extent. Both of these agents seem to have great therapeutic action.

DR. SHAILER.—In regard to the scar—the recurrence of the disease. Was that sarcoma?

DR. GRAD.—I have made no examination, but it is very likely it is the same process as originally.

DR. BROUN.—In regard to the fibroid tumor specimen: I always leave one or both ovaries, in the hope that leaving the ovary will ameliorate and soften down the forced menopause, but where the patient wishes to be absolutely assured that there will be no possibility of any recurrence of any kind of a tumor, I cannot assure her that one of the ovaries will not undergo cystic degeneration, because they have been known to undergo such degeneration—therefore, I think, under those circumstances, a man is justified in removing all these organs.

DR. DOUGAL BISSELL.—Regarding the case of Dr. Emmet. The mass discovered in the posterior cul-de-sac during convalescence was perhaps an organized blood clot; I therefore think that vaginal drainage in this case would have been advantageous. The oozing of blood doubtless continued after the completing of the operation, and its extent was limited by the stitched peritoneal surfaces.

DR. EMMET.—It might have been, but there was a temporary rise of temperature for a couple of days, then a small discharge per vaginam; it evidently had access to the canal. After that there was no further trouble whatever, and only when the patient was leaving the institution, and I examined to see that everything was right, did I find the induration.

I approve of always having the canal thoroughly opened, and therefore never stitch the two sides over the canal, so anything about should find its outlet. As to this question whether one should drain from the canal under such conditions. Some gentleman said he always made a point of stretching the canal very thoroughly so as to give an opportunity for anything to reach it—

to give it the best conditions for outlet. I think that a very good suggestion, to see the way absolutely clear for drainage, and it should suffice to drain the cellular tissue of those parts. I do not use gauze drainage except I may have had some in the uterine canal after curetting. Such a bit I might leave for twenty-four hours.

DR. BROUN.—It seems to me in those cases where it is possible to stop oozing by means of stitching, beginning from above down, taking up not only flaps of peritoneum but connective tissue, one can see whether oozing stops or not. I see no necessity in such cases of putting in gauze drainage. If one finds after a few stitches that one fails to stop the oozing by this method of obliterating all dead spaces, it is necessary that gauze drainage should be placed. I would not leave the cervix open because I think the cervical canal is too small an opening for drainage, there is not enough exit to prevent damage. I stop the oozing if possible; if I cannot, I put in drainage until the oozing stops.

DR. SHAILER opened a discussion on

HOW IS THE PESSARY SUPPORTED?

In considering to-night the anatomical supports to the pessary I shall have in mind the highest perfected, yet simplest form of instrumental support of the uterus, the lever pessary.

Of this class of pessary the Hodge or Hodge-Smith pessary has been and is to-day the most used and most practical of any of the several styles.

It will be found on thoughtful consideration and careful analysis that a great majority of the modifications of the Hodge pessary have been devised for the purpose of overcoming or producing pressure, of diminishing or increasing tension along the several lines of support to the pessary or uterus. And it will be further seen that where the Hodge pessary will not succeed these modifications will not produce good results for when the reciprocating counter-pressure of a properly fitting Hodge pessary fails it is a dangerous procedure to attempt the direct acting pressure pessaries. I wish briefly to direct your attention to the anatomical parts supporting and aiding in the support of the pessary with special reference to the support of the fulcrum, which, as you know, is the sharp curve at the center part resting on the posterior floor of the vagina.

The chief supporting structures lying in the floor of the vagina are the muscles and fascia, the vascular, nervous and mucous tissue playing a secondary part so far as the vitality of these parts is concerned.

There is a mass of fibro-elastic and muscular tissue between the rectum and vagina at their lower part into which many of the muscles and fascia of these regions blend and which, therefore, make it an object of importance. This is the perineal body,

so called. It is about an inch broad, wedge-shaped with the base towards the skin. Into this body are blended fibers and tendons from the central part of the triangular ligament of the sphincter vaginae, transverse perineal, external sphincter ani, levator ani and deep transverse perineal muscles. A tear of the perineal body or parts of the fibers uniting with it relaxes the whole vaginal floor, producing changes as high as the vault of the vaginae.

We must, therefore, consider this body as aiding in the support of the pessary.

Again these muscles as the sphincter vaginae interlace with the corresponding muscle on opposite side of the vagina, others unite or blend with the deep fascia as the obturator and other fascia supporting the pelvic viscera and floor.

So that the action of that muscular tube, the vagina, upon this wedge, the pessary, is to force it upwards and towards its larger end and if it were not for the leverage action much harm could be produced. As to the two arms of the instrument the long anterior arm rests against the anterior vaginal wall just back of the pelvic bones and the vestibule of the urethra. The tissue here is much more firm and non-resistant, so that instead of pressure at this point producing a sinking into the tissue, the arm slides along the wall.

The short arm lying back of the cervix rests between the cervix and the vault of the vagina, it being able to sink into the tissue in proportion to the amount of pressure produced at that point.

We have, therefore, these important facts to bear in mind, that the long arm and fulcrum are on movable points, and the short posterior arm has a fixed point of pressure.

When we take up the leverage of the pessary we find that the long arm is about twice as long as the short arm and that pressure exerted at the short end is double that at the long end.

Now, when we have an expulsive effort at the short arm the long arm not only slides somewhat, but the fulcrum base is moved also, that taking up reciprocating pressure for the short arm. And inversely under normal conditions pressure on the long arm produces twice as much pressure on the post-vaginal vault by way of the short arm. The structures supporting the fulcrum, extending along the posterior vaginal wall being muscular and elastic tissue produce a variable pressure which under normal conditions so far as this floor is concerned, holds the short arm in apposition to the vaginal vault against which in turn there is the tension of the utero-sacral ligaments, the weight of the uterus and vaginal walls as counter pressure through the short arm, but there is a minimum of pressure against these structures, for the pessary is suspended, balancing, as it were, on this movable fulcrum and not wedged into the vagina. The walls of the vagina, with the aid of the cervix over which the short

arms are hooked, tend to keep the pessary from turning and with its flat long anterior arms form a loop which holds the instrument up in place.

It is, therefore, apparent, as I have stated above, a relaxation or tear of muscles composing this floor tends to weaken and destroy a suitable base, the wedge shape to the vagina is lost and the pessary slips down, the cervix slides over the loop of the small posterior arm and the displacement recurs.

To recapitulate, the pessary is held in place by the elasticity of the walls of the vagina, conforming to the wedge shape of the part as well as its curve and by the loop on the short arm hooked over the cervix. It is supported by the counter-balancing of the two arms in conjunction with the fulcrum and its muscular floor, upon which it rests.

The structures holding the instrument in place and supporting it are so intimately related in their function that, of course, no definite line need be drawn.

DR. GOFFE.—The purpose of this discussion, as I understand it, is to stick very closely to the mechanical principles involved. Let us see if we can arrive at some conclusions that will enable us to name these supports or forces in the order of their importance.

I have just referred to one of the latest text books which appeared this autumn. The author says the pessary is held in the vagina by the shape of the canal—S shape in its curve and funnel shape from above downward. Second, by the cervix over which the pessary bar is hooked and also by the grasp of the elasticity and muscular tissue of the vaginal wall. I think we all recognize there is some truth and some error mixed in this. When he says the pessary is held in the vagina by being hooked over the cervix, he utters a paradox, for nothing can be so absurd as to expect the object, which the pessary is going to support, to hold up the pessary. We have not only to decide what the supports are, but combat error. The second error is very common. This winter I heard a man lecturing on the pessary. He insisted that the pessary got its support from the face of the symphysis pubis.

Dr. Shailer has named the supports of the pessary in the following order: 1. The elasticity of the walls of the vagina. 2. The muscles of the floor of the pelvis. 3. The perineum. 4. Funnel shape of the vagina. 5. The long arm of the pessary getting its support in front and thus overcoming pressure made on its short arm by the weight of the uterus, the pessary being balanced on a movable fulcrum, the floor of the pelvis.

DR. CARNEY.—The funnel shape of the vagina with the muscles, comprising that funnel in a normal condition, is the more material support.

DR. SHAILER.—The most important point in the whole support of the pessary is the elasticity of the muscles of the poste-

rior wall of the vagina, posterior to the peritoneal body where the fulcrum of the pessary rests. From a mechanical view, everything is subsidiary to that. Others are of importance, but only when the fulcrum is in good condition; so that, of course, comes first.

I am of the opinion that neither the cervix nor shape of the vagina support the pessary. The support of the instrument depends entirely upon the integrity and tenacity of the perineum and lower vaginal structures. This point I have demonstrated conclusively to myself by inserting pessaries when both cervix and fundus of the uterus were removed, and when incessantly the normal shape of the vagina was also changed, with complete success as to retention of the instrument and support by vaginal vault.

DR. FORD.—I agree with Dr. Shailer, that the perineal body is the main support.

DR. BROWN.—The chief support of the pessary is the posterior wall of the vagina which is kept up by the attached muscles, associated with the shape of the vagina. The grasping influence of the posterior wall of the vagina is the most vital portion of the support of the pessary.

DR. LAUSTAFF.—The elasticity and funnel-shape of the vagina are the chief supports to the pessary. This involves the integrity of the posterior wall of the vagina.

DR. GRAD.—The posterior part of the vagina has nothing to do with the support of the pessary. It is entirely supported by the integrity of the perineal body and the pelvic fascia that covers these various muscles. Dr. Emmet has called particular attention to this fact. This structure, I believe, is of great importance. When the perineal body is destroyed the pessary is kept in place by the pressure of the vaginal walls themselves. It is merely kept there by a mechanical force—by the fact that the anterior and posterior vaginal walls press upon each other. If the perineal body is gone and there is no practical support to the pessary, we cannot expect any good from the pessary.

DR. CLEVELAND.—Dr. Shailer covered most satisfactorily the mechanical action of the pessary. All these forces have their effect—certainly the elasticity of the vagina and the funnel shape of the vagina. The perineal body is the most important factor in holding the pessary in position. If the perineal body is torn through, it is almost impossible to hold the uterus in place by the pessary.

DR. EMMET.—My idea coincides with that of the speaker who used the word "integrity." The more the parts are in integrity the better will the pessary be held, in what we call a normal vagina. If we have measured the space we have to use, the vaginal walls lie against it and the pessary does not press unduly against them. The circulation should not be obstructed. The pessary should lie passively.

DR. THOMPSON SWEENEY.—The muscular tonicity of the posterior wall supports the pessary, and it is due to tonicity that the upper arm of the pessary hooks upon the cervix. As you pull down the lower arm the pressure upon the bend forces the upper arm up behind the cervix and drawing it out in that way, is apt to throw the uterus behind.

DR. GOFFE.—No one has spoken of the support of the pessary as coming from the posterior wall of the symphysis. I suppose all condemn it emphatically. If anyone does not, let us hear from him.

As to hooking over the cervix: It has been said that in removing the pessary we always take hold of the long arm and force it back toward the perineum. The more you do that the more you hook the pessary over the cervix, and only when you have done that does the pessary catch and pull upon the cervix. The pessary does not necessarily touch the cervix when in proper position. It is only when we pull the instrument down that it hooks upon the cervix.

In regard to the actual support of the pessary I agree entirely with what has been brought out to-night, that the chief support is the fulcrum that is obtained from the floor of the pelvis—that the short arm of the pessary is above and the long arm below, and thus by having two points of support on one side and one on the other we get the power. When the pessary is properly placed, and the woman on her feet, it stands almost directly up and down, *i.e.*, in line with the axis of the body. With two points of pressure on one side and one opposing point on the other, any instrument can be held in an upright position without any support underneath it. When the pessary is properly placed, the uterus being in normal position, all it has to do is to carry the cervix up in the hollow of the sacrum and gravity takes care of the fundus. The weight on top of the pessary is extremely slight when carried up high enough to bring the abdominal pressure upon the fundus. Auxiliary forces like the shape, and contracting force of the vagina are important. The pessary is made wedge-shaped so the large end above it fits the shape of the vagina. That naturally gives it support. The fulcrum and the two arms of the lever are the all-important forces. When the perineum has been torn we can sometimes, by adjusting our lever properly and giving the pessary a sufficient curve, establish a fulcrum to the back above the perineum that will still keep the pessary in place, but the pessary would require an extreme curve.

ALCOHOL IN ABDOMINAL SURGERY.

DR. BISSELL.—During the past six months I have been freely applying 95 per cent. alcohol to all surfaces exposed to infection by pus. The usual precautions are, of course, first taken to protect the intestines and limit the area of contamination as much as possible. The entire pelvic cavity is then mopped with

gauze sponges saturated with 95 per cent. alcohol. The abdominal wound likewise smeared with alcohol of the same strength. The alcohol coagulates blood quickly, and the resisting clots are removed with gauze saturated with saline solution. Even in the most unpromising cases my results have been uniformly successful.

During the past week I had the opportunity of testing the stimulating properties of alcohol. The patient upon whom I contemplated hysterectomy was a weak and emaciated subject. When about to operate the patient became asphyxiated from ether. After her restoration, pulse continued feeble and the advisability of continuing operation questioned. When the abdomen was opened her condition again became serious. Though she had lost but little blood, symptoms of collapse recurred to such an extent as to make me feel that the contemplated operation was impracticable. In one of the pus cases referred to above I fancied I saw a marked stimulating effect produced by the use of alcohol, so I determined to try in this case the effect of 3i of alcohol in about Oi of salt water. The result was very gratifying and I was enabled to complete the operation without further difficulty. Another half pint of the same strength was poured into the peritoneal cavity before the wound was closed. The patient's pulse steadily improved and her convalescence was uneventful. She left the hospital on the fifteenth day.

In the first class of cases I used alcohol for its germicidal effect, and observed in one case a marked stimulating result.

In the last case I used it for its stimulating effect only.

TRANSACTIONS OF THE NEW YORK OBSTETRICAL SOCIETY.

Meeting of November 10, 1903.

The President, GEORGE W. JASMAN, M.D., in the Chair.

DR. F. R. NELSON presented

A SPECIMEN OF APPENDICITIS.

The appendix contained a chain of small, hard bodies, which a microscopical examination showed to be of vegetable nature.

DR. W. S. STONE presented

THE UTERUS OF PYOMETRA: NECROTIC SUBMUCOUS FIBROMYOMA.

He had removed the uterus from a patient, fifty-six years of age. Its interior showed three submucous fibromyomata, one of which was completely necrotic, and a cicatricial contraction just above the internal os, that had caused the pyometra. Symptoms of septic intoxication had furnished the indication for the opera-

tion. He wondered whether a curetting that had been performed several years before, or circulatory disturbances and the atrophic changes incident at her age, were factors in the etiology.

DR. H. J. BOLDT did not think the previous curetting figured in the present condition. He narrated the history of a very large fibroid complicating pregnancy, in which a diagnosis of ovarian cyst had been made two years before.

DR. S. MARX, although he did not think the curetting to be the cause in this case, considered that curettage was performed too frequently in cases of fibroids occurring during the child-bearing period, and that sloughing was a frequent result especially during the puerperium.

DR. E. B. CRAGIN, as emphasizing the dangers of fibroid tumors, referred to by Dr. Marx, cited two cases that had required hysterectomy within a month after delivery, because of necrotic changes.

DR. J. CLIFTON EDGAR related the histories of

THREE CASES OF PLACENTA PREVIA:

I. A primipara of six and a half months, partial variety, delivered by version, after previous softening and dilatation by vaginal packing, developed convulsions a few hours after delivery.

II. A IV. para; near full term; central variety; treated by a midwife, and sent to the hospital in a condition of collapse. Treatment of the general condition was attempted for a few hours before delivery, as there was no bleeding. Reappearance of bleeding in a few hours demanded the delivery and in spite of active treatment of the acute anemia, the patient died in two hours.

III.—A III. para; lateral implantation; generally contracted pelvis; shoulder presentation. Manual dilatation of os; pedalic version; recovery of mother and child.

Remarks.

1. The laws of this State are responsible for the death of Case II. and her child, since they permit uneducated women to practice surgery.

2. Case I. illustrates the value of the tampon as a temporary measure to control hemorrhage until the shortening of the cervix and drawing up of the internal os renders a rapid dilatation and delivery a safe procedure.

3. Case II., although resulting fatally, was treated expectantly in order to rally the patient, as long as it was deemed safe. When we were compelled to operate, the least radical means were used—namely, the plugging of the cervix by the half breech, and completing the dilatation of the cervix subsequently. No method of manual dilatation of the cervix other than the bimanual method would have permitted of this procedure.

DR. S. MARX considered the following three points:

1. He thinks the gauze should be packed into the cervix as well as the vagina, thus foreshortening the cervix, producing pos-

itive dilatation of the internal os, as well as almost positive prophylaxis against hemorrhage.

2. The use of the intra-uterine tampon after delivery he considers a necessary prophylactic against hemorrhage, as the uterus in these cases is not normal, but weakened from rapid pregnancies, lacerations and endometritis, and as there is always a general anemia.

3. The question of Cesarean Section in cases of placenta previa in a contracted pelvis, should be decided by the degree of bony anomaly, and seldom, if ever, by the presence of the placenta previa.

DR. EDGAR considered Dr. Marx's point in regard to tamponing the cervical canal well taken, but in one case the dilatation had already progressed so far that the cervical canal had disappeared, and in the other it was deemed inadvisable because the insertion was practically central. He formerly would have agreed with Dr. Marx in regard to the post partum intra-uterine tamponade, but from two autopsies he had seen in which large blood clots had been found above the packing, he did not consider it to be reliable.

DR. EUGENE COLEMAN SAVIDGE read the paper of the evening on

THE UNCLASSIFIED TROUBLES OF WOMEN.

The disadvantages, he says, of classifying become apparent as experience shows so many border line examples, not sharply defined as gynecological, and neglected by leaders in gynecology, who, by their training, are fitted to deal with such cases. The brilliant work of those who consider gynecology as a branch of surgery restricted to the uterus and its appendages, has established a new branch of medicine, in which the chief factor—namely, the sex, demands a broader conception of his work, whether it be hygiene, physiology, pathology, longevity, or even psychology. The entailment of sex most frequently will focus symptoms upon the local organs, treatment of which demands a consideration of certain matters connected with the feminine element which make for woman's longevity, and determine her resistance to many of the inevitables involved by her sex. Instead of palliating an obliterating endarteritis and various acute diseases, the postponement of the class of hemiplegics for at least a decade, and furnishing resistance to acute troubles, may be accomplished by attention to the great tubular works of the body.

Women being the transmitters of the race, such a subject directly devolves upon the gynecologist. "What sadder picture of professional limitations can be presented than that of a patient in whom the great vaso-motor changes have had their obscure beginnings, who is led to believe that the little cicatricial plug in her cervix uteri is the sum and substance of her trouble? The relation of gland function to elimination, circulation, arterial integrity, effective longevity, is illustrated by the woman without her ovaries, or by the condition that he calls the "self-obiterated

feminine element." This latter condition appearing, in young girlhood from over-expenditure of vitality in intellectual or emotional pursuits, and in middle life by those women whose increasing lithemia, obesity and diminished menstruation prevent the proper functioning of their glandular apparatus.

The phenomena attendant upon the menopause, in women of higher evolved nervous structure, is a psychological matter which aggravates enormously the physical condition. The recognition of this principle has enabled Christian Science to steal our opportunity.

DR. E. H. GRANDIN.—It should be gratifying to this Society to hear a paper of this kind, which diverges from the surgical and takes up the medical side of our specialty. It teaches that in addition to the pelvic organ women possess a liver, intestinal canal, kidneys and other organs, which demand that a gynecologist must be first of all a physician.

DR. F. R. NILSON considers that gynecologists recognize these unclassified troubles.

DR. H. VON RAMDOHR would deduce from the paper that gynecologists should be good general practitioners. He, however, was glad that as a gynecologist he had been able in one case to find out that a persistent vomiting was due, not to a disease of the stomach, but to a uterine displacement; in another case, presenting the same symptoms, he had found acute oophoritis from a marital injury.

DR. BACHE EMMET thought the consideration of such a subject to be timely, as many of us were apt to neglect certain important points in relation, for example, to the developmental changes concerning menstruation and their proper hygiene. He would emphasize the marked difference between the peasant and finer bred girl and their different necessities. He would call attention to the importance of a proper guiding of the woman through the disturbance of the menopause.

DR. SAVIDGE, in closing, said that as women are only sent to the gynecologist because of local trouble, any attempt to be more than a "mere localist" would be encroaching upon the general practitioner. The patient often falls between the two, on this border line between the specialty and general medicine, getting nothing from either at a time when attention is the most important. His contention is that this field belongs to the gynecologist, and he would so instruct the general practitioner.

WILLIAM S. STONE,
Editor.

TRANSACTIONS OF THE
WASHINGTON OBSTETRICAL AND
GYNECOLOGICAL SOCIETY.

Meeting of October 2, 1903.

The President, G. WYETH COOK, M.D., in the Chair.

DR. D. W. PRENTISS presented a specimen of
INTRAMURAL FIBROID OF THE UTERUS, REMOVED BY SUPRA-VAGINAL
HYSTERECTOMY.

The President read the annual address,
SOME SUGGESTIONS THAT SHOULD BE GIVEN THE YOUNG PRIMIPARA
BEFORE AND AFTER PARTURITION.¹

Meeting of November 6, 1903.

The President, J. WESLEY BOVÉE, M.D., in the Chair.

DR. J. WESLEY BOVÉE presented a specimen of
OVARIAN DERMOID CYST WITH A TWISTED PEDICLE,
and with a history as follows:

Mrs. S., white, 47 years of age and mother of nine children; was sent to Columbia Hospital, September 12, 1903, by Dr. Hunter of Georgetown. She had been married 24 years, and her last child was born in 1898, since which time she had had two miscarriages, which were attributed to overwork. Her menstruation began at the age of 13 years; for the past few months had been regular, lasting two to three days, and scant. The last period was two weeks ago, and the patient thought she was in change of life. This period was very painful. She suffered with "misery in the bottom of the stomach" of one week's duration. Upon examination the cervix was found pointing forward, indurated and slightly lacerated. A mass thought to be the uterus and a tumor extended to about four inches above the pubes, and was soft and irregular in shape. On September 15th the abdomen was opened, and the left appendage and vermiform appendix were removed. The uterus was found to be small and soft, and the right appendages normal. The left ovary and tube were a blackened, soft, globular mass filling the pelvis and reaching to the umbilicus. It was intimately adherent on all sides to the bladder, uterus, intestinal loops, omentum and peritoneum. There was absolutely no free surface to it. The pedicle consisted of the ovarian liga-

¹See original article, page 156.

ment and Fallopian tube, and was twisted two complete revolutions. The tumor and vermiform appendix were removed with the electro-thermic angiotribe of Downes, No. 1 catgut being used on the cecum. Recovery was without incident. Dr. T. S. D. Grasty, Associate Pathologist to the Hospital, pronounced it a dermoid ovarian cyst with hematosalpinx.

Dr. Bovée also presented a specimen of

LARGE OVARIAN HEMATOMA WITH TWISTED PEDICLE AND OVARIAN ABSCESS WITH SANGUINO-PURULENT CONTENTS.

Mrs. S., 36 years of age, white, was admitted to Columbia Hospital, September 29, 1903, suffering with womb trouble and pain in her right side. She had had three children, the last being born in 1898; all labors were normal. Menstruation began at 15 years of age, and usually lasted six days; was normal in amount, painless, and last occurred September 24th. She had been ill since July 26th. Her father died of cancer of the stomach, and one sister of catarrh of the head. The patient had had chicken pox, measles, mumps, whooping cough without sequelæ. She had always been healthy and strong otherwise, was a little troubled with constipation and had never had leucorrhea. On July 26th, the patient feeling well in every respect went to bed after returning from an outing trip. About midnight she had severe pain in the right inguinal region which lasted for a week, and she was confined to bed for two weeks. Her doctor told her she had a tumor, and advised an operation. There had been no marked symptoms since the end of the first week. An examination after admission revealed a mass in the lower portion of the right side of the abdomen, reaching to within two inches of the umbilicus and slightly fluctuating. The cervix was found to be hard, lacerated and protruding anteriorly; the uterus, slightly enlarged, was pushed far to the right and downward by a fluctuating mass. On the 2d of October, abdominal section was made, and the mass found to consist of a large ovarian hematoma extending nearly to the umbilicus, adherent on every side and even to the anterior abdominal wall. It was found to be the right ovary twisted about one and one-half revolutions upon its pedicle and laying well over to the left side of and above the uterus, crowding that organ downward to the right. It was very dark in color and of pulpy consistence, as if containing thickened blood. The left ovary was about three times the normal size, containing numerous cysts and abscesses into which hemorrhage had occurred. It was adherent firmly and in the cul-de-sac. After the removal of both appendages the round ligaments were attached to the upper portion of the posterior surface of the uterus. The vermiform appendix, thickened, adherent and deeply injected, was removed. Downes' electro-thermic angiotribe was used instead of ligatures for all the intra-peritoneal work. Recovery was continuous. Dr. Grasty's pathological diagnosis of the specimens removed in this case is an old blood cyst of the right ovary with necrotic walls and no evi-

dences of inflammation and left ovarian abscess with sanguino-purulent contents.

DR. I. S. STONE presented notes of a case of

APPENDICITIS WITH RUPTURE INTO THE URINARY BLADDER.

Mrs. T., aged 50, had the usual symptoms of appendicitis during the early part of August last, and had a decided swelling in the right iliac fossa which was ascribed to suppurative mischief about the cecum or ovary by her physician, Dr. Tulloss of Virginia. After three weeks' illness, during which time the patient had all the characteristic symptoms of infection, she began to suffer from cystitis, and finally discharged a considerable amount of pus from the bladder. Her condition immediately improved and the pulse and temperature gradually returned to normal. On the 24th of October, we saw her in consultation with her physician, and found her rapidly improving in every way, although a mass could still be felt which indicated the site of the former abscess and appeared to be the adherent appendix. The mass extended from the cecal point downwards towards the bladder, and we were not surprised to find the appendix attached directly to the sub-peritoneal cellular tissue, if not to the bladder itself. When the the abdomen was opened we found the cecum drawn towards the bladder by a healthy looking appendix which had a very fat mesentery. The abscess had been safely discharged into the bladder and we had only to detach the adherent appendix and omentum and remove them. The bladder was intact, but the appendix was perforated at its distal extremity. Owing to the presence of a quantity of cheesy cellular tissue around the site of the former opening into the bladder, we placed a drainage tube outside the peritoneum, having its exit near the anterior superior spine of the ilium. The patient promptly recovered.

DR. C. BROWN MILLER had seen Dr. Bovée's first case, but did not make a diagnosis of twisted pedicle. He found encysted fluid, and thought it to be encysted tuberculosis. She did not give a clear history of sudden sharp pain and collapse, nor the pain which follows.

DR. BOVÉE.—Generally these patients give no history previous to torsion. The twisting may be gradual, with no sudden sharp pain. If there is a sudden twist the pain is continuous. These tumors twist in certain directions, the right sided turn towards the left and the left towards the right. Twisting is more common in pregnancy. Irregular tumors twist more frequently than small globular ones. Dermoids, owing to a difference in specific gravity, frequently twist. Gangrene does not usually occur. The circulation is cut off in the pedicle, but the tumor continues to be fed by adhesions. Twists occur in from 6 to 30 per cent. of ovarian tumors.

DR. W. R. CARR asked why a short pedicle allowed twisting more rapidly than a long one? He had reported several cases of twisted pedicle. In one the tumor went to pus very rapidly and

was mistaken for appendicitis. If the twisting is gradual, adhesions form and the tumor may not die. A dermoid may become infected and break down into pus. He thought the diagnosis of twisted pedicle seldom made.

DR. JOSEPH TABER JOHNSON read a paper entitled

GONORRHEA AND ITS COMPLICATIONS, AND OUR RESPONSIBILITY IN AUTHORIZING MATRIMONY.¹

BRIEF OF CURRENT LITERATURE.

DISEASES OF CHILDREN.

Alimentary Glycosuria in the Children of Diabetic Persons.

—Arnold Lorand (*The Practitioner*, October, 1903) states that the majority of children of diabetic persons have inherited a certain defective power of dealing with sugar in their economy. Apparently the power to assimilate carbohydrates is diminished. This is the principal symptom of an inherited diabetic predisposition. But there are frequently other symptoms as well, such as acne vulgaris, obesity, precocious puberty, short sightedness after puberty, premature grayness, gingivitis, alveolar pyorrhea, atrophy of the gum, retraction of the dental pulp, etc. All these persons are candidates for diabetes, but it does not necessarily follow that the disease will develop in every case. It can develop in persons who are addicted for a long time to an irrational nourishment (containing an abundance of meat, and also of sweet and amylaceous food). We must do our best to defer its advent to a late period, or to prevent its onset altogether. The diet should be frugal, and much meat should not be taken simultaneously with sweet and starchy food. In India, diabetes is exceedingly rare among the poor Hindoos who live only on rice, and most frequent among the rich Hindoos who eat much meat as well as rice. It is an interesting fact that extirpation of the pancreas produces diabetes only in those birds which eat meat. The psychical education of children predisposed to diabetes must be supervised. We should recommend them not to embrace callings in which they might be exposed to great intellectual strain or psychical emotion (physicians, lawyers, stockbrokers). Sport is very valuable for these children unless they are of a nervous and timorous disposition. Alkaline mineral waters are valuable, as they improve the assimilative power for carbohydrates.

Anemia Infantum Pseudoleukemica (von Jaksch).—In addition to reporting an interesting case, George M. Tuttle (*St. Louis Courier of Med.*, November, 1903) remarks that this disease has too much leukocytosis to be classed with pernicious

¹See original article, page 168.

anemia; too little leukocytosis, a spleen too enlarged in proportion to the size of the liver, and too little lymphatic infiltration for leukemia; and with none of the enormous conglomerate enlargement of the lymph nodes seen in pseudoleukemia. It is possible, however, that the disease is not a real clinical entity, but is a transition stage of one of the other three, more especially leukemia or pernicious anemia. The clinical type is not well cut, some observers reporting that the prognosis is almost uniformly fatal, others that there is an occasional recovery, and still others that the prognosis is favorable. The disease is usually seen from the sixth month to the third year of age and frequently with a history of rickets, gastro-intestinal trouble, bad feeding, or syphilis.

Cough in Influenza Simulating Whooping-Cough. Pseudo-Pertussis.—Arthur J. Patek (*Wisconsin Med. Jour.*, November, 1903) calls attention to the meagre reference in the literature on influenza to this form of paroxysmal cough which so frequently stubbornly resists all forms of treatment. The cough resembles the paroxysms of pertussis so closely that a diagnosis is often very difficult, though not impossible. Forchheimer noticed this pseudo-pertussis to move in epidemics, associated with the symptoms of influenza: there were fever, respiratory and gastro-intestinal disturbances. The author believes that this symptom exists as a clinical entity—an occasional complication of influenza, and not only as the characteristic of true pertussis. As a help in diagnosis in favor of this pseudo-pertussis, as opposed to pertussis, one may note the existence of an epidemic, the sudden onset and presence of influenzal symptoms, the very early development of the whoop after the first catarrhal manifestations, the persistent fever and marked asthenia, the quick cessation of all catarrhal symptoms when the whoop has ceased.

Feeding of Infants with Mother's Milk.—Menti (*Archiv f. Kinderbk.*, Vol. 37. No. 1 and 2) discusses the subject in all its bearings, and concludes that the only food which promises any certainty of the normal physiological development of the infant is mother's milk. In the interest of the undisturbed development of the child nursing by his own mother is indicated. Should this prove impossible, a wet-nurse should be employed. Artificial feeding is to be restricted to a few necessary cases; because, by retarding the physical development of the child, such feeding becomes the source of a greater mortality and of many dyscrasias which prevent healthy growth later. Feeding an infant by means of the mother or nurse can only be successful if the quantity and quality of the milk, and the changes that occur during the period of lactation are considered. In view of the fact that feeding with mother's milk is the only method which brings about healthy growth and development, it is important that this method should be made possible and accessible to all classes. Physicians should favor the establishing of institutions for this purpose, and nursing

mothers should be paid to nurse another child as well as their own. The entire wet-nurse system must be regulated and overseen by law. Were all energies bent toward affording the children of the masses facilities for being wet-nursed, instead of furthering the practice of artificial feeding, the coming generation would grow stronger instead of weaker.

Infections in the Newborn.—In the course of some remarks upon this subject, Samuel McHamill and William R. Nicholson (*Arch. of Ped.*, September, 1903) state that hemorrhagic conditions in the newborn may, in certain instances, be due to such causes as birth trauma, fetal malformations, asphyxia and syphilis, but that in the vast majority of instances they are symptoms of an infectious condition. These infections occur most frequently in maternity hospitals, where the opportunities for the dissemination of disease germs are extraordinarily great. The air is probably infected through the medium of the clothing and hands of the attendants, the stools and buccal secretions of the patients, the bed clothing and the infant's napkins, and it is possible that infections do sometimes occur from this bacteria-laden air. The mother's milk has been held accountable and doubtless is responsible for a small percentage of cases. In the presence of suppurative lesions of the breast, pathogenic micro-organisms are liable to be introduced. In milk from apparently normal breasts micro-organisms, mainly the staphylococcus aureus and albus and the streptococcus, have been isolated. A source of infection that has been noted is the bath-water of the infant, especially when the same water has been used for the ablutions of several infants. The placing of infants in beds which have previously been occupied by infected infants, and the bedding together of the infected and the non-infected has resulted in conveying the infection. The authors have been led to believe that the buccal cavity—the tonsils, pharynx and remainder of the alimentary tract, is the most common port of entry. Next in order, they would implicate the lungs. The cord has been given too great a prominence as the port of entrance, and the skin, conjunctivæ, nose, ears, and urogenital tract are rarely responsible.

Injuries and Infections of Newborn Children.—In order to show the high degree of mortality that still exists among young infants Irving M. Snow (*Arch. of Ped.*, September, 1903) quotes statistics collected by Eröss from sixteen large capitals of Europe. It was found that 9.5 per cent. of all children born died in the first four weeks of life. In Budapest, where the mortality in the first month is 8.11, it was discovered that of these children 37 per cent. died in the first week, 29 per cent. in the second week, 21 per cent. in the third week, and 13 per cent. in the fourth week. The deaths in the earlier days were principally due to malformations, injuries of parturition and asphyxia. After the first week infections caused the majority of fatalities. In Buffalo, where

the mortality for the first month is 9.30 per cent., or about the same as the Continental cities, nearly double the number, or 68.5 per cent. die in the first week, and 32.5 per cent. from the seventh to the twenty-eighth, against 63 per cent. in Europe. We may conclude, therefore, that more children die in this country from accidents of parturition and fewer from infection than in Europe. Malformations incompatible with life, asphyxia and atelectasis, injuries of parturition, and various infections are the causes of mortality in early life. The conditions of asphyxia and intracranial hemorrhage are most closely associated. The effect of prolonged, difficult labor not only favors the aspiration of foreign substances into the lungs and paralyzes the medullary respiratory centers with CO_2 , but it also causes cerebral hemorrhages from traumatism arising from the application of the forceps, or nipping of a cerebral sinus in the forcible moulding of the head. Further, the intense cerebral congestion of dystocia may cause a rupture of the very fragile vessels of the pia mater. Hemorrhage is, in fact, the most frequent lesion found in infants still born, or dying soon after birth. Cerebral hemorrhage may occur also in children who are easily born. There may be no sign of cerebral irritation, and the infant may die without symptoms, or may show irregular respiration and slight cyanosis simulating asphyxia or atelectasis. In meningeal hemorrhage there is a series of convulsions, irregular breathing, cyanosis, opisthotonus, rigidity, quivering and automatic movements. The majority of cases die before the fourth day. On the other hand the convulsions may subside and the child later suffer from epilepsy, procalysis, idiocy, or dull mentality.

Ophthalmia Neonatorum and the Gonococcus.—Schauz (*Deut. Med. Wochens.*, Vol. 29, No. 45) believes that the generally accepted observations in ophthalmia in infants, made soon after the discovery of the gonococcus by Neisser, were based upon insufficient data. It has been found recently that inflammations of the eyes of infants may be clinically indistinguishable from true blennorrhea, and yet the gonococcus may never be found in them. Again other micro-organisms are capable of producing the typical picture of gonococcus inflammation. In the urethra, on the other hand, only the gonococcus causes blennorrhea. The difference in susceptibility to microbic infection may partly explain the difference between the urethral and conjunctival conditions. The pseudo-gonococci are probably only varieties of the true species.

Pertussis; Etiology and Pathogenesis of.—Reyher (*Jahrb. f. Kinderhk.*, Vol. 58, No. 4) studied thirty-four cases of pertussis in children from two months to nine years of age. In every case he found a bacillus which is larger than the bacillus of influenza, and agrees in almost every detail with the organism described by Czaplewski in these cases. It was present in the sputum, nasal secretion, and otitis pus during life, and after death

in the mucus of the larynx and trachea. In one case it was also found, in sections of the trachea and larynx, within the lining epithelial cells. It was readily cultivated in various culture media. While absolutely positive proof that this bacillus is the etiological factor in pertussis is lacking, its constant presence in large numbers makes it highly probable that such is the case. As pertussis seems to be a purely local disease, its serum treatment need hardly be considered.

Pneumatocele Cranii Occipitalis.—J. de Bary (*Archiv f. Kinderhk.*, Vol. 37, Nos. 1 and 2) describes the case of a three-year-old girl of tuberculosis family history, who showed scrofulous symptoms at a very early age. A suppurative otitis media developed, but yielded to treatment, and the general condition improved greatly. A swelling as large as an apple appeared on the right side of the head. It was not tender, was covered with normal skin and apparently fluctuated. No trauma had occurred, and there were no constitutional symptoms. The swelling increased markedly in twenty-four hours. A needle withdrew air and a few drops of blood. When the child screamed the swelling grew large and tense. A compress was applied for some hours after the puncture, and the swelling gradually disappeared in ten days. Röntgen-ray photographs showed a light spot which may have been due to a defect in the mastoid, allowing air to pass from the cells to the tissue under the scalp. But the interpretation of the pictures remained of doubtful value, as good controls of normal children were not available. The case differs from those already reported in being younger than any other, in coming under observation at the onset instead of after months or years, and in being cured spontaneously. The otitis media was undoubtedly the etiological factor in this case, having caused caries of the mastoid. The author concludes that it is wrong to designate these swellings as chronic, the possibility of an acute course being proven, and that the bone is not involved.

Tonsillar Ulcer of Vincent.—Lawrence T. Royster (*Arch. of Ped.*, August, 1903) reports a case in a child which was well developed and well nourished, whose pulse and temperature were normal, and who had apparently no indisposition beyond pain on swallowing. The lymph nodes at the angle of the jaw on the right side were greatly enlarged; on the right tonsil there was a patch of grayish deposit, nearly as large as the tonsil, slightly depressed and having a very ragged outline. The edges were redder than the normal color of the tonsil, and on removing the membrane, or rather slough, which came away without resistance (but had a great tendency to rapidly reform), one could see the ulcerated and bleeding base of the lesion. The tonsil was hard and indurated. The culture was shown to be free from the Klebs-Loeffler bacillus. The idea of syphilis was abandoned because of the child's age (seven) and the next thought was of Vincent's ulcer. From the edge of the ulceration the author made

a smear which he stained with dilute carbol fuchsin, and then found the fusiform bacillus and spirillum of Vincent. As to treatment, he advised hot gargles of normal salt solution and applied tincture of iodine locally. The ulcer had entirely disappeared in three days after treatment was instituted. The practical importance of this condition will at once appeal to the reader, for it may readily be mistaken for either diphtheria or syphilis. The diagnosis from diphtheria is comparatively easy. The normal pulse and temperature and the absence of pronounced indisposition point to a non-diphtheritic lesion. The marked tendency to chronicity makes it certain that it is not diphtheria, for it is probable that the physician will not be consulted until the condition has existed some time. The diagnosis from syphilitic ulceration is a much more difficult matter; so much so that the author believes the average practitioner would pronounce it specific had his attention not been previously directed to Vincent's bacillus. A certain diagnosis from syphilitic ulceration can only be made by the microscope.

The case reported properly belongs, the author thinks, to the cases described by Paltauf as "status lymphaticus," for the lymph nodes, including the thymus, were found generally greatly enlarged. The alcoholic and consumptive family tendencies were probably the remote causes of this condition, the child inheriting the consequences of these diseases and his bad hygienic surroundings continuing their development. He was also suffering from beginning rickets, both conditions showing how seriously his nutrition was affected. There is no evidence that the enlarged thymus caused his death by direct pressure on the trachea, for there is no history of dyspnea or "thymic asthma," and at the autopsy the trachea was found normal in contour. The autopsy showed, however, that there must have been considerable pressure on the great vessels and the base of the heart, for the hypertrophied thymus gland made direct and decided pressure on these parts. The manner of his death was that of heart paralysis, he died quietly and quickly. Just such a death as Paltauf and others have described as frequently occurring in the condition of status lymphaticus, but in this case it would seem that the large thymus by directly pressing on the great vessels and heart may have been a direct factor in causing the sudden death.

The Assimilation of Sugar During Childhood.—Greenfield (*Jahrb. f. Kinderhk.*, Vol. 58, No. 4) studied this subject in thirty-three children, aged from one month to thirteen years. No case which ran a fever temperature was studied, but convalescents were taken. The results showed that the limits of assimilation of grape sugar are not influenced by the body weight, by the state of nutrition, nor by such diseases as anemia, rachitis, tuberculosis and lues, and enlargement of the liver and spleen. It is dependent, on the contrary, upon the age, increasing with each year, until at the end of the first decade it reaches the amount which is normal for adults.

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ORIGINAL COMMUNICATIONS.

ANESTHESIA IN ABDOMINAL SURGERY.

BY

J. J. GURNEY WILLIAMS, M.D.,
Philadelphia, Pa.

IN presenting this paper, I do so with the hope that we will have a very free and open discussion of this important subject—*anesthesia in abdominal surgery*. That time has passed when one can say with any degree of conscience, “O any one can administer the anesthetic.” I am willing to admit that almost any one can pour ether or chloroform on a towel and rob a patient of his senses and produce narcosis. So can almost any one cut off a leg. We must remember, however, that there is something besides mortality and accidents in giving anesthesia; there is the patient’s mental suffering previous to the surgeon’s work. The many doubts, misgivings and the fears of our patient are often caused more by the thought of the anesthetic than of the operation. Let each one put himself in the patient’s place, and I doubt not that he would understand and appreciate the cause of rapid pulse, quick breathing and anxious face. These and mental anguish are manifest on the approach of the stranger who is to destroy thought, feeling and strength by giving them something of which they know little or nothing. It is easy for us, who have seen so many cases, to make light of this mental terror, and yet

does the telling a woman in labor how thousands have suffered as she is suffering make *her* pain the less? When we stop to consider this subject from the patient's standpoint, the question as to who shall be selected to administer the anesthetic becomes one of great importance. Some of us have seen patients nearly drowned by ether and killed by chloroform in the hands of those who knew nothing about one or the other. Again, we have seen ether poured into a metal cone by the ounce at a dose until it was dripping over the patient's neck, or a piece of gauze is soaked and placed tightly over the face, eyes and all, followed by the request "to breathe easily." With enough help, the case is etherized, but there is little easy breathing. We are all quite familiar with the clinic days in some of our large hospitals, where the one selected to administer the anesthesia is the latest addition to the Resident Staff. The surgeon who is in a hurry to get through with his six or eight cases compels the young man to half strangle all his patients and give to each four or five times more vapor than is necessary. When I entered the hospital as an interne, among my first duties was the administration of anesthetics—this in spite of the fact that I had never done so previous to my appointment. My experience was limited to seeing ether used in such quantities that I am satisfied twenty to thirty ounces were consumed during a simple section; it was poured onto gauze or more often into a cone by the ounce at a time. We are beginning to see that this condition of affairs is faulty, and one which demands our attention and some radical changes. I am glad to know that our Colleges are now teaching this branch to their students, and that in some hospitals a salaried anesthetist forms one of the Staff. Every hospital should have such a man and much will be accomplished when this branch is recognized as a speciality. I am in a position to know that the student of to-day has little knowledge regarding the administration of anesthesia, as in my obstetrical work I am frequently called upon to apply forceps, repair a laceration, and occasionally to perform version and find the coming physician tremendously deficient. Take away the anesthesia from the newest interne, the nurse, the orderly and the layman, and place it in the hands of a well-trained, experienced man, and we will have made a great stride on a good road. I dare say, should any of us be compelled to take an anesthetic that each would make a pretty keen choice as to who should administer it. How many of you know the amount consumed or the condition of your patient while you are washing your

hands? Consider just a moment, and I doubt not but you will agree with me that the anesthetist ought to be as well trained in his work as the surgeon is in his. He should act promptly and properly on the first indication of failing heart or respiration; he should watch the pulse and not the pelvic cavity, the pupils and not the peritoneum. I insist on these things for the reason that a patient under surgical anesthesia is in a condition to be closely watched. Most of the accidents can be accounted for by the anesthetist not seeing *at once* the first indication of distress. Those who have had considerable experience in this subject acquire a certain skill in appreciating quickly the approach of complications, a skill which cannot be explained any more than can the sense of touch, attained by some operators, and yet appears to be quite as keen and in some cases quite as important. How often does the success of an operation depend on a carefully given anesthetic and how often does the surgeon's welfare depend on the anesthetist are two questions not given enough consideration. Arriving at the time when we select our anesthetic with the same care as the patients their surgeon, we will find the choice of the anesthetic one of less importance than formerly. I mean that the choice of any certain substance is of far less importance than the one selected to administer it. This selection is one largely of the individual operator and of locality. In the East ether is more popular; in the South chloroform is used with great success and we find the choice is one of teaching and experience. The man coming from the South, after becoming familiar with chloroform, will see operations under ether and being favorably impressed will substitute and find it unsatisfactory; while those whose work has been limited to ether will have accidents when using chloroform. The physician who practices in the country is told and shown the benefits of various combinations, and then goes home to waste valuable time in the endeavor to procure the oxygen tubes or nitrous oxide bags. For the reason that my experience has been largely one of administering ether is not sufficient for my saying that this is the best and only substance which should be selected in abdominal surgery.

Spinal cocainization has been tried and it seems found wanting. A number of successful operations within the abdominal cavity have been done, yet one such experience as Dr. Edward Wallace Lee had in a section would make most of us abandon this form of anesthesia. Dr. Lee tells us¹: "In the surgical cases

¹New York Medical Journal and Philadelphia Medical Journal, August 29, 1903. Page 408.

there was one abdominal section for tuboovarian abscess. The incision was quite long, and was made without the least distress to the patient; but when I inserted my fingers into the abdominal cavity, she became restless and highly hysterical. A loop of intestine presented itself in the wound, which, unfortunately, the patient saw. She became maniacal, and it was with difficulty that I was able to extract my hand from the abdominal cavity, such were the powerful contractions of the abdominal muscles. It is needless to say that the operation was finished under chloroform narcosis. The patient told me subsequently that it was not so much the pain, but a nervousness she could not control."

Anesthol is highly spoken of and successfully used by Dr. Willy Meyer, yet the advantages alluded to, can, I believe, be obtained by the *proper* use of ether. Theoretically, I should think the preliminary morphine injection would be harmful in many abdominal lesions, practically the author says not. I do not wish to dismiss anesthol as of little importance, it is only the lack of experience with this substance which compels so few words as to its virtues.

My use of chloroform is limited to some fifty cases, all of which were successful so far as the anesthetic was concerned. I am not among those who have any fear of this vapor in abdominal surgery, and feel that in careful hands it becomes a much safer substance than many believe.

When we come to the selection of our anesthetic, it will in the vast majority of cases, be one between ether, pure, with nitrous oxide, with oxygen or chloroform; by most of us probably ether alone will be chosen. The latter is the one I shall now call your attention to and give my reasons for preferring this anesthetic.

1. It is always or nearly always possible to procure a fresh supply. This is not so with chloroform as that made for anesthesia is not kept by all druggists, a prescription for this drug being filled by the commercial article which, of course, is totally unfit for anesthesia. Only a day or two ago I heard of a patient who was operated upon after being put under the influence of spirits of chloroform.

2. So far as statistics go ether is the safer, about one death occurring in ten thousand cases; chloroform one in two thousand. The educated public know this and frequently request that chloroform shall not be used. Personally, I do not think that this gives the relative safety in competent hands.

3. The patient can be placed under ether nearly and in a good number of cases, quite as easily, quickly and quietly as with chloroform. In point of fact, I have etherized a patient in exactly ten seconds, he taking only five inspirations. This was a strong, robust young man who was to be operated upon for hernia. The anesthetic was administered by fitting over the nose and mouth a rubber mask connected to the ether bottle by a tube, the bottle being plunged into boiling water a few seconds previous to beginning the administration. Leaving out the element of speed, this method has nothing to recommend it.

4. With ether you can keep the patient in pretty much the stage desired; with chloroform I have seen them go quickly from sensation of pain to deep narcosis.

5. When we are compelled to place the anesthesia in the hands of a layman or, as has been done, the domestic servant, I believe ether is safer than chloroform. The latter is likely to kill early, during the first few inspirations or when struggling occurs—just the time when one not familiar with the vapor would crowd the anesthetic. This point, no doubt, will be disputed.

6. When organic heart disease is present ether, for a time, stimulates the heart. I have repeatedly seen patients leave the table in a better cardiac condition than before the operation.

7. I have administered ether to alcoholics, those with pulmonary tuberculosis and with pathological kidneys, and believe it is as safe as any general anesthetic, if not safer.

More important than the reasons for selecting ether in abdominal surgery are the results obtained by its use. In a series of about one thousand anesthetics, in my own and one other physician's practice who employs the method to be alluded to, we have had no deaths from the anesthetic. Nothing but pure ether was used, excepting in one case where oxygen was given by request of the patient. The head has never been lower than the trunk in a single case. No instrument of any kind was ever placed on the patient's tongue, neither has a mouth-gag been used. Hyperdermic stimulation was necessary in only three cases, atropine and strychnine being given. Artificial respiration was practiced twice. In both the cause of respiratory failure was the same, and I was much impressed by the accident. Each occurred in a patient undergoing hysterectomy for fibroid tumor. In the first I had placed a large gauze towel in the abdomen to hold up the viscera and at once the patient ceased breathing; the ether was withdrawn, jaw pushed forward, and artificial respiration

started without the slightest response. I then withdrew the towel with the result of having respiration return at once. In the second case I was giving the ether, when the gauze was placed in the abdomen, precisely the same occurrence took place as in the first case. After removing the pad breathing was established; it was again introduced within the abdomen, and breathing at once ceased. The Trendelenburg position was not used in any case. The question as to what effect, in regard to the anesthetic, this posture may have, I am not prepared to say.

In this series almost every abdominal condition has been encountered, including many cases considered bad subjects for etherization; profound shock from ruptured ectopic pregnancy; bowel obstruction; post puerperal sepsis; ruptured gangrenous appendicitis, and general peritonitis. Kidney operations, those on the liver and gall-bladder, acute and chronic suppurative tubal and ovarian disease may also be mentioned. It is only proper, however, that I should call your attention to the fact that at least ninety per cent. of these patients were women. This point should be understood as the cases do not include the lower, hard drinking element, so commonly seen in general hospital work. Some of these do badly under ether, and we have to substitute chloroform. Personally, I have seen only one case where ether was unsatisfactory.

The question naturally arises, could not the same results have been obtained by the use of some anesthetic other than ether? I doubt not that chloroform could have been given, and yet some of these operations lasted one-and-a-half to two hours. Excepting in the hands of an expert, the administration for this time, in one exhausted by chronic suppuration, would, I feel, have had a less chance for a successful outcome. I should like to have some discussion on this point by those who use it in such cases. There is nothing new or out of the ordinary in regard to the method of administration in the series of cases alluded to. There are, however, some important details which seem small, yet are required as practical experience has demonstrated. Those about to undergo a surgical operation are acutely alive to their surroundings and, as I have said, in many cases fearful of the anesthetic. I would urge upon those about to administer these, the need for remembering, that there is something besides having our patient react from the operation. There is the anxious mental state, the fear that they will die, the fear of feeling the surgeon's knife, the fear that they will not be closely watched.

Some may say these things are trivial; the operation is the important part. I answer, they are *not* trivial, and that your work will be better done; your patient's convalescence shorter, and your success greater by paying attention to details usually ignored. How many men say a few encouraging words to their patient, and then send a man they dread more than him, who thinks his "vocation" is to cause unconsciousness regardless of ways and means. The anesthetist should be one who approaches his patient in a manner to instill confidence; he must be neatly dressed; have clean hands and nails; he should never wear an operating gown or cap, nor have his sleeves rolled up. He should never have hemostats, mouth-gag or tongue-puller hanging to his coat; they are usually unnecessary and disconcerting to the patient. Any one present should be requested to be as near absolutely quiet as possible; talking or any noise interferes with a satisfactory anesthesia. Here I would suggest that the family physician, friend or member of the family, who loudly announces the condition of the patient's pulse, or criticizes your method, be invited to leave the room. This has happened several times to the writer, much to the patient's distress. A few encouraging words, the assurance that the operation will not be started until they are fully under the anesthetic and the statement as to the good quality of the pulse are all important in many cases, especially with women. The patient should now be requested to clear the air passages and to remove any foreign body from the mouth.

The ether, always from a freshly opened can; sulphuric and not a sulphurous ether, is administered on a square of gauze of at least twenty layers. We should begin by allowing a few drops to fall on the center of the pad and let the patient "see what it is like" by holding several inches from the face. This is followed by a request to close the eyes and to breathe as they wish, but stating the benefits of slow, deep inspirations; still holding the gauze, so as not to touch the face, ten to twenty drops are added, being careful not to allow one falling in the patient's eye. In the majority of cases we are able to increase the amount every few seconds until thirty or forty drops are added each time, the pad being brought close to the nose and mouth, never covering the eyes, and allowed to stay there throughout the entire operation. In some cases after breathing quietly eight or ten times, the respiration will cease, in this case the patient wants air and the withdrawal of your towel will be followed by two or three quick inspirations. Early in the administration of ether the

ceasing of respiration need rarely cause any anxiety, unless it is caused by spasm of the respiratory muscles. In this case immediate steps should be taken for its reestablishment. When your patient has been fully etherized, there are two methods which may be used during the operation: 1. The anesthetic may be given by dropping one-half to one dram over the nose-tip every minute or so; 2. Use the "drop method" as in giving chloroform, allowing one drop to slowly follow another. One very important point in this connection, is *to always turn your towel over* after each addition in the former method and every few minutes in using the "drop method." During an ordinary section I always use two towels, one soon becomes saturated with mucus which interferes with the proper volatilization of ether. Whenever possible, I prefer to keep the gauze an inch from the face, allowing a certain admixture with air; this can frequently be done in acute septic cases and those whose resisting powers are feeble. The special relation of anesthesia to abdominal surgery requires the attention, on some few points of importance, to operator and anesthetist alike. The surgeon on his part must not hurry his assistant so as to strangle his patient, neither should he have patients placed under anesthesia until he is prepared to make his incision. This embraces two procedures: First, if there is only one patient for operation, operate just as soon as the sufferer is placed on the table. There is nothing worse than chronic surgery within the abdominal cavity and all lectures, histories and notes should be read before the case is brought in the operating room. Operate with the same speed and dexterity as in pre-anesthetic days; do your work as deftly and quickly as is compatible with good surgery. The other class is where there are several cases for one clinic; never allow a patient to be anesthetized until you are ready to make your incision within five minutes. Aside from the injustice to your patient, think of their vapor-logged condition. Avoid instructing your assistant as to the serious condition of lungs and heart and then add "hurry your anesthetic, my time is limited"; I have known one of the best anesthetists to be robbed of all confidence by this advice;—following instructions was the cause of a death.

Unless absolutely necessary, never request an anesthetic to be given to anyone suffering from an "acute cold"; your patient will go under struggling, stay under badly, and come out worse. The anesthetist on his part should keep in mind, that a septic patient usually requires very little vapor to produce and keep

under surgical narcosis; this is especially true of puerperal sepsis. That pus cases of all kinds, in many instances, stand anesthesia well, this is equally so of abdominal hysterectomies. The removal of a cystoma, even one the size of a lemon, is frequently followed by shock out of all proportion to the operation. That during perineal operations and vaginal hysterectomies, very often the patient appears shocked during the operation, yet when the legs are straightened improvement rapidly occurs. It would appear that the flexing and holding of the thighs over the abdomen is conducive to shock. He must remember during appendicitis and bowel stitching operations, that vomiting and retching are to be strictly avoided; a few inspirations of air followed by several drops of fresh vapor will usually overcome this tendency. That heaving of the abdominal wall and efforts to swallow, seen early in the administration, indicate the attempt to vomit; in this case push your anesthetic; when occurring late in the operation, the patient needs air, withdraw the vapor, gently push the jaw forward, and turn the head to one side. I know of one case where the patient, vomiting during anesthesia filled the trachea with gastric contents which were found post-mortem. It is always proper to inform the operator of failing pulse or respiration, keeping in mind, that separating strong adhesions, enucleating old pus-tubes, hemorrhage, and when the peritoneum is opened in vaginal hysterectomy that there usually is a change in character of both breathing and pulse rate. Always withdraw the anesthetic when tapping a large cyst or ascites, and when removing bulky fibroids, *keep it withdrawn until the patient shows signs of returning consciousness.* The anesthetist's whole endeavor should be to administer the vapor so gradually and carefully that the transition from one stage to the next will be a slow agreeable process, void of all sensation of suffocation. Struggling is the result of haste and of all the things to be avoided most rigidly it is this, as I believe it is the forerunner of about all accidents during chloroform or ether narcosis. It can about always be avoided by giving the vapor slowly; mixed with a good quantity of air.

I have made inquiries regarding the amount of ether consumed during a section, lasting from thirty to forty minutes and find from six to eighteen ounces is used, the time to induce surgical narcosis about ten minutes. Bear in mind these two points, the average time should be eight minutes, the amount four to five ounces. In the series of cases spoken of it has never been necessary to administer more than eight ounces, although some of the

procedures lasted one and a half to two hours. It is interesting to know that some surgeons are offering prizes to the student who uses the least anesthetic during their clinic. When we hear of prominent operators using ether with oxygen or nitrous oxide, the same men who for many years have administered pure ether, are we not apt to consider that there must be a reason for this change? That it shows advancement along the natural lines of progress and that it is more up to date is equally true, and yet I cannot help but feel that it is largely due to an abuse of what has been given us by Morton and Simpson; a neglect of the possibilities of ether or chloroform alone. Paying more attention to those we already possess would have made men hesitate to try the combinations. I do not mean to say that the future will not produce an anesthetic more safe, more pleasant, or more satisfactory than ether or chloroform, but I am about convinced should we first perfect our administration, our care and our attention to these that future discoveries along this line will not be tried before the discoverer himself knows what he has given us.

In closing this paper I fully realize its shortcomings and know that many important things have been left unsaid. It is given you with the wish that these omissions will be filled by the opinions of those present who have had a long and varied experience along this line of work, opinions which are so important to the general practitioner who reads our papers and discussions.

331 SOUTH THIRTEENTH STREET.

DUPLEX PLACENTA.¹

BY

HENRY F. LEWIS, M.D.,
Chicago, Ill.

THE mono-discoidal placenta is the form commonly found in the human species, but that form is by no means constant, nor does the type belong exclusively to man. Between the usual single disc of the human placenta and the smooth false amnion of the marsupials great variations exist. In many species of mammal no specialized portion of the decidua and chorion has been differentiated into a real placenta, but villi are found over the whole surface of the ovum, even to full term. This is the rule in whales, in hogs and in a few others. In the ruminants there is no localized placenta, but numerous cotyledons are scattered over the whole surface connected with each other by vessels and all finally communicating with the umbilical cord. The animals of this type are called the *indeciduata* because the decidua is not cast off. The placenta of the *carnivora* and the horse is in the form of a ring around the equatorial zone of the ovum (*placenta zonaria*). The discoidal shape is the common one in many other animals including the bats, many monkeys and man. Huxley and Owen described the single placenta of the chimpanzee; Deniker the same form in the gibbon. The single round placenta seems to be the usual type in the anthropoids. From seventeen observations by different authors upon the placenta of *macacus*, a medium-sized long-tailed ape, the bi-discoidal type was found to exist fourteen times. In other species there has been found to be much variation. Breschet, as early as 1845, described a double placenta in a gibbon. Great variability is observed in the form of the placenta in the different allied species of the same genus among many genera of mammalians. A high morphological value, therefore, cannot be placed upon the external shape or number of parts of the placenta. As a general rule, however, it seems as if the bi-discoidal and the polydiscoidal placentas were reversions to a lower type.

In speaking of multiple placenta, of course, one means a pla-

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centa of more than one part with a single ovum and has no tendency to multiple pregnancies. Grann reports a case which was called on account of bleeding, which was persisting after delivery of the child and the placenta. He found the uterus contracted, but evidences of great hemorrhage having taken and still taking place. The hand introduced into the uterus found more placental tissue and finally removed a second placenta as large as the first and adherent to the posterior wall of the uterus. The membranes were well developed. There was a cord seven centimeters long with the distal end obliterated at the placental end inserted velamentously into the membranes. No trace of a second fetus could be found in the second amnion. The first placenta and membranes were intact and the twins appeared like the two placentas of binovular twins and neither a placenta succenturiata nor placenta duplex.

Unlike this case, the true multiple placenta means an organ composed of more than one portion but all lying on the same ovary, usually connected by vessels to each other and eventually by a single umbilical cord. It is rare to find more than two sections of the multiple placenta, but several have been reported having three, four, five or even more discs. Blot, in 1856, described five discs perfectly isolated and arranged like satellites around a larger oval disc. Ribemont-Dessaignes has seen many examples of the polydiscoidal placenta, mostly in the Maternité in Paris. Pinard and Tarnier have observed others. Hyrtl described a placenta of seven lobes. The polydiscoidal placentas do not show a constant type. The point of insertion of the cord and the character of the membranous bridge between the two discs are both variable. One type is the tri-lobed placenta. In this type there are two distinct lobes, each somewhat smaller than a normal placenta, and a third small lobe between the others. Sometimes there is a regular bridge of more or less atrophied or degenerated placental tissue and sometimes a distinct little disc. The insertion of the cord varies. Sometimes it is to one of the large lobes and the vessels divide at once, running over the median lobe of the other large mass; sometimes the cord goes directly to the median lobe and branches, or its vessels branch to the two discs; sometimes there is a velamentous insertion.

The bi-discoidal placenta, the true placenta duplex, has two separate lobes of nearly equal size, the vessels of which are distinct and do not unite until just before entering the cord. The two portions are not usually quite equal in size, the one is

from the cord insertion being usually a trifle larger. The cord may be inserted into the membrane between the discs; on one disc with vessels passing directly to the other; at the distal border of one disc with the vessels to the other running around the lower portion of the membranes near the os to reach the second disc. In such a case as the last there may be danger of rupture into the vessels at the time the waters break and consequent hemorrhage from the fetal circulation, as in some instances of velamentous insertion of the cord. Ribemont-Dessaignes describes four cases of true placenta duplex, stating that the membrane between the two lobes bore no trace of placental tissue, but he does not say that he verified this by the microscope.

The bi-lobed placenta, the placenta bi-partita, is not completely separated into two distinct lobes, but is united at one place, usually near the insertion of the cord. More often the two parts of a double placenta are unequal. The smaller one may consist of only a few cotyledons. Such are known as accessory placentas. The cord is usually inserted into the larger lobe on the side towards the accessory placenta. Sometimes the insertion may be into the membranes between or velamentously. If the accessory placenta or placentas consist each of only one cotyledon the case is called one of placenta succenturiata. The small accessory disc is almost always connected with the main lobe by vessels, often very thin and fine. The succenturiate placenta may be very minute, even less than the size of a thumb nail, in which case it may be very easily overlooked when the afterbirth is examined. The key to such a small piece being left behind is seeing vessels passing from the margin of the main lobe out upon the membranes. This examination is best made by holding the membranes against the light.

The cause of duplex and multiple placenta is somewhat in dispute. It may be that for some unknown reason, vascularization does not limit itself to one area of the chorion frondosum but develops early in different parts of the chorion and these vascularized villi unite with the decidua in their neighborhoods to form placental tissue. In almost every case the total area, bulk and weight of all the placental tissue in a multiple case is much greater than the average in normal placentas. Therefore it does not seem likely that a single placenta is divided into two or more parts because of atrophy or degeneration of the villi and of the decidua in the interspace. If such atrophy does occur it must occur early and a corresponding increase takes place in the number of the func-

tionating villi to make up for and more than make up for the atrophied portions.

Ahlfeld considers the cause of duplex placenta at least to be the fact that the ovum is imbedded near the tubal corner of the uterus where the mucous membrane cannot make a perfect decidua and therefore the serotina and the resulting placenta is split into two lobes, one lying on the anterior and the other on the posterior wall of the fundus of the uterus. We may consider the multiple and the duplex placenta as a reversion to a lower mammalian type. In those apes which normally possess a double placenta no villi are found in the membranous space between the lobes. The separation is complete. In man, where they have been searched for microscopically, traces of villi have usually or always been observed in the interspace.

Multiple placenta, including all varieties, such as the poly-discoidal, the duplex, the bi-lobed, the accessory and the succenturiata, is probably not a very rare anomaly, although there are strangely few observations reported in the literature. Most of the text-books refer to Ribemont-Dessaignes who published in 1887 a series of observations upon multiple placentas chiefly from the material of the Maternité in Paris. In that hospital from 1883 to 1886 inclusive there were 6,701 labors. In that time there were 19 placentas found which presented one or more extra lobes; therefore a proportion of one-multiple placenta in 352 labors. Nine of these were duplex placenta. This is a proportion of one in 733 cases. In the *Index Medicus* and *Bibliographia Medica* for the last five years I find references to only six cases of multiple placenta of all types. Ahlfeld claims that duplex placenta, including the incomplete bi-lobular form, occurs about once in 600 times.

The practical results of duplex placenta and the other varieties of multiple placenta consist chiefly in the chances that one or more of the accessory discs may be left behind and give rise to dangerous hemorrhage or become infected and cause sepsis. In several of the cases that Dessaignes describes the second disc was retained within the uterine cavity and was only suspected because of the hemorrhage and a careful examination of the after-birth and the membranes. The cord is frequently inserted in an abnormal manner. In seven out of seventeen of Dessaignes' cases the cord was inserted not in either lobe of the placenta but into the membranes, six times in the space between the discs. In velamentous insertion, if the vessels pass near the place of

rupture of the membranes, there is some danger that one of them may be torn across and cause death of the fetus from hemorrhage. In a duplex placenta one lobe may be situated low and antepartum or postpartum bleeding may result as from any other placenta previa. There is also more likelihood where there is such an excessive area, that some portion will become prematurely detached and accidental hemorrhage result. One lobe may be adherent and thus act as an obstacle to the delivery of the whole after-birth. Cazeux states that the retained cotyledons have continued to live and, on removal weeks afterwards, have shown no traces of putrefaction. Whether they showed degeneration he does not say.

The practical lesson to be observed is to examine the after-birth and the shed membranes with sufficient care so that one can be sure that nothing has been left behind in the uterus. It is not enough to look at the placenta alone; one must hold the membranes up to the light and see whether there are any vessels running off from the margin of the placental disc. If so these must be traced and the spot where they end must be scrutinized for evidences of the tearing away of an accessory lobe or a succenturiate portion. If it appears that a piece of any but the very smallest size has been retained in the uterine cavity the hand must go in search of it and remove it.

The patient who bore the placenta which I present to the Society was a secundipara who had exhibited no abnormality at her first labor. At that time the physician in attendance made no mention of any peculiarity in the placenta and, since he is a competent person, it is fair to assume that it was not unusual in appearance.

The second labor was also perfectly normal and was short. The child lay in occiput laeva anterior position. The placenta was delivered spontaneously in about a quarter of an hour. No hemorrhage or other abnormal circumstance accompanied its passage or followed. On examination of the secundines subsequently I found that there were two distinct placentas connected with one set of membranes and with one cord. The two portions were each only a little smaller than a normal single placenta. At first sight the discs appear to be completely separated, but on closer inspection it is seen that there is a narrow thin bridge of placental tissue running across the membranes in the intervening space. In one place this bridge takes on the shape of a little disc measuring less than an inch in diameter and less than an eighth

of an inch in thickness. The rest of the membrane in the space between the large discs appears to the naked eye to be entirely free from placental tissue.

For the sake of clearness we will designate the large discs right and left. The right disc measures 13 cm. by 17 cm. The left measures 11.5 cm. by 14.5 cm. From the outer edge of one disc across to the outer edge of the other is a distance of 27.5 cm. They are 3 cm. apart at the nearest points. The thickness of each portion is about that of a normal single placenta. The whole afterbirth with the membranes weighed 27 ounces. Thus in area, weight and bulk we have about half as much again placenta as normally in a single birth.

The cord enters the right disc (the larger one) near its upper margin, considering the opening where the membranes ruptured as the bottom. A pair of vessels and some Wharton tissue run across at the upper margin to the other disc. The specimen was injected with celloidin, colored with carmine and with prussian blue. The vein of the cord at about six inches from the attachment was opened and normal salt solution passed in from a percolator hung about three feet higher than the specimen. Then two per cent. formalin was passed through and allowed to remain twenty-four hours. Then 80 per cent., 95 per cent. and absolute alcohol were run through and then alcohol and ether in equal parts. Finally five per cent. celloidin containing carmine was injected by a piston syringe into the vein and the same containing prussian blue into the artery. There was only one artery in the cord, as appeared by the naked eye and as was confirmed by the microscopic examination of sections at various places in the cord. The vein branches at once from where the cord enters the right portion, sending one large branch with the accessory cord before mentioned across to the other portion and three large branches over the surface of the right disc. The artery makes a similar division. A smaller branch runs from near the entrance of the cord in the right disc obliquely downwards across the intervening membranes to the lower part of the left disc. This branch supplies the interspace and the bridge of placental tissue already spoken of. The large branch of the vein which runs across with the accessory cord from the right to the left disc branches to run over the surface of the left disc. The artery also branches here in a similar manner. The branching of the vessels in this duplex placenta as they leave the cord is really very like that in the normal case as is depicted in Minot's work on Embryology.

Microscopic examination of the edge of the discs shows normal placenta. Sections of the bridge of placental tissue and of the little disc included within that bridge show villi, decidua, vessels, sinuses, etc., much atrophied and degenerated. Sections of a piece of the membrane in the space between the two placental portions, where the unaided eye sees no sign of placental tissue, show even here many imperfect and degenerated villi, many more than we expect to find in the chorion laeve normally.

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REPORT OF A CASE OF THE INVASION OF A FIBROMYOMA
OF THE UTERUS BY AN ADENOCARCINOMA, WHICH
BY METAPLASIA HAD ASSUMED THE APPEAR-
ANCE OF A SQUAMOUS CELL CARCINOMA.

BY

CHARLES P. NOBLE, M.D.,
Surgeon-in-Chief, Kensington Hospital for Women,
Philadelphia.

(With Plate.)

I WISH to report a very rare, if not a unique case, of invasion of a fibromyoma by carcinoma, the unique feature being that the fibroid tumor was apparently the seat of a squamous-celled epithelioma. A careful examination not only of the pelvic organs, but of the entire body, failed to show any other point of cancerous growth, so that the question to explain is how a squamous-celled carcinoma could be present in a fibroid tumor. This being a pathological question naturally was of special interest to Dr. Richard M. Pearce, the Pathologist to the Kensington Hospital for Women, who studied this growth, and his explanation of the situation is given in the pathological report upon the specimen.

Miss M., æt. 63, was referred to me by Dr. J. H. Pugh, of Burlington, N. J. Her family and personal history presented nothing of special nature. She passed the menopause at the age of forty-five without special incident. She had been well until nine months before consulting me, at which time her only symptom was that she had difficulty with the bladder, and sometimes incontinence; subsequently she was troubled with leucorrhea in increasing quantities and with some odor. For the past few weeks the leucorrheal discharge was stained with blood. Upon examination a virginal and senile vagina was found; the cervix was small and normal; and the uterine body was much enlarged and irregular in shape, suggesting a fibroid tumor. A clinical diagnosis of degenerating fibroid tumor, or a fibroid tumor complicated by an adenocarcinoma of the corpus, was made. As the physical condition of the patient was good, hysterectomy was advised. She entered the Kensington Hospital for Women and was



FIG. 1.

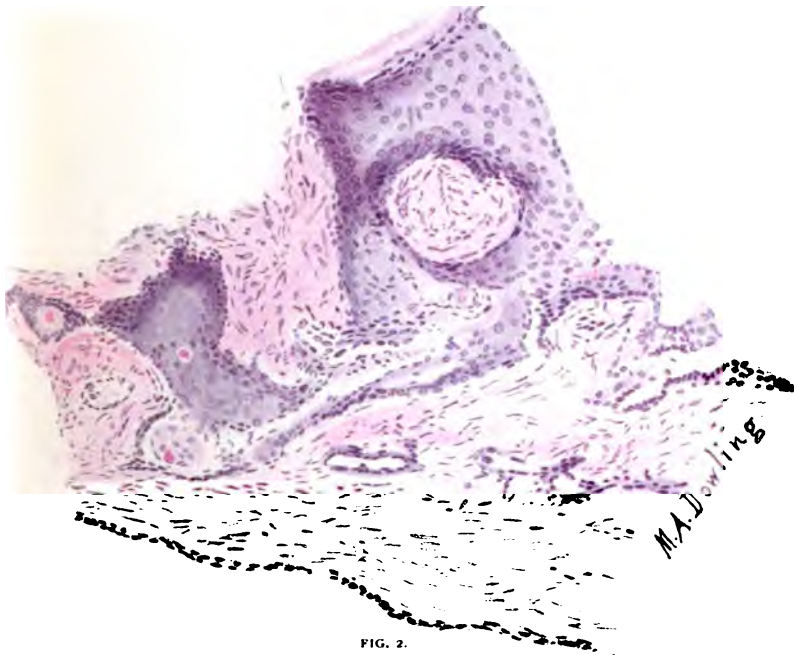


FIG. 2.

Fig. 1.—Section near surface of tumor, showing the papillary appearance of the new growth and glandular character of the epithelium. In upper portion the transition from cylindrical to squamous type of cell is seen.

Fig. 2.—Portion of tumor presenting picture of squamous cell carcinoma.

operated upon February 18, 1903. Partly for diagnostic purposes, and partly to clean out the field of operation, the initial step was the curettage of the uterus. The curette brought away none of the material which is usually characteristic of adenocarcinoma, but a tumor projecting into the cavity of the uterus could be readily recognized, so that the original impression of a degenerating fibroid was confirmed. The usual hysterectomy by the method of supravaginal amputation was then performed. Before closing the abdomen, the specimen was cut open by Dr. Tracy, when the endometrium was found smooth and apparently uninvaded by any growth. Nothing was apparent to the naked eye, except the degenerating fibroid. The cervix, both as seen and felt from the vagina and through the abdominal wound, appeared normal. The amputated cervix was closed by suture in the usual manner, the stump covered with peritoneum, and the abdominal wound closed. The operation was followed by an uncomplicated recovery.

When the pathological report upon the specimen was received, the question was what should be done with the cervix which had been left in. As there was no sign of its involvement, and as the portion of the uterus adjacent to the cervix was not invaded by cancer, it was decided to leave the cervix *in situ*. Miss M. has continued well since the operation.

The pathological report follows:

Miss M., æt. 63 years. Clinical Diagnosis.—Degenerated fibroma.

Macroscopical Examination.—Specimen consists of uterus amputated at cervix. Uterus is greatly enlarged, and on section is found within the uterine cavity a firm globular tumor 12x5 cm., adherent by a short pedicle to left upper portion of uterine wall. Except at pedicle tumor is entirely free from uterine wall. Both surface of tumor and mucosa of uterus are covered with a thin muco-purulent fluid. The surface of the tumor is irregularly nodular and presents a few small yellowish areas suggesting fatty degeneration; the portion of the tumor projecting toward the cervix is irregular, ragged, edematous, injected, and softer than the upper portion. On section, the tumor in its main portion is of a uniform grayish-white color, smooth, glistening, and of dense consistence, with here and there a few opaque grayish-yellow areas. Uterine mucosa is edematous and injected.

Microscopical Examination.—(a) Section of tumor shows edematous smooth muscle and fibrous tissue (fibromyoma), in which

the smooth muscle has been replaced largely by connective tissue. The edema is extreme, and in many places the connective tissue is hyaline. Throughout are seen numerous masses of epithelium, of the epidermoid type. In the centers of such masses is much keratohyalin and a tendency to form epithelial pearls. Section from surface of tumor shows a thin covering of squamous epithelium, and in some places this epithelium can be seen extending into the tumor after the manner of a papillary growth; in other places a distinctly glandular arrangement of cells is seen. The epithelium seems to occupy spaces in the tumor similar to lymph spaces. Near the surface of the tumor are seen small accumulations of lymphoid cells and old blood pigment, but no evidence of an acute inflammation. No karyokinetic figures are found.

(b) Wall of uterus. The glands are slightly irregular in shape and in some places dilated, with considerable infiltration of lymphoid cells. No definite evidence of malignancy is seen. Portions taken from opposite tumor show almost complete disappearance of glands, and a transformation of the covering epithelium into a thickened layer of cells.

The important point in connection with this tumor is the question of origin of the epithelial masses. According to the literature the following sources are reported:

1. Metastases from tumor in other parts of the body. Such an extension has been reported by Schaper from primary cancer of the lung (*Virchow's Archiv*, 1892, CXXIX, 61).
2. Extension to myoma of cancer of uterus. Cases reported by Bubl (*Mitt. a. d. path. Institut. z. Munchen*, 1878, p. 291); Röhrig (*Zeitsch. f. Geb. u. Gyn.*, 1880, V, 265), and Cullen (*Cancer of the Uterus*, 1900, p. 410); Ruge and Veit (*Zeit. f. Geb. u. Gyn.*, 1881, VI, 261; 1882, VII, 138).
3. Development of cancerous tumor from epithelium normally contained in fibromyoma. Of this type the "myocarcinom" described by Liebmann (*Virchow's Archiv*, 1889, CXVIII, 82), is not satisfactorily explained. Rolly (*Virchow's Archiv*, 1897, CL, 555) describes an intramural myoma presenting the picture of carcinoma, with metastases in the liver and bones. The uterine mucosa was normal. He believed the uterine tumor to be primary and to have its origin in an adenomyoma, which in turn had developed from the remnants of the Wolffian body.

In the case here reported, complete physical examination shows no evidence of tumor of other organs, and the portion of the cervix not removed appears normal.

Sections of the tumor have been carefully studied in the endeavor to demonstrate a development from either the epithelium covering the tumor or from glandular elements contained within it. No evidence of the latter mode of development is seen. There is, however, distinct evidence in favor of the former. At a point where the tumor was in contact with the uterine wall, its outer surface is covered by a wild growth of cylindrical cells, in distinct tubular or adenomatous arrangement, and with in places also alveolar arrangement. From this point papillary-like processes lined by the same type of cell extend into the loose texture of the tumor, forming for themselves lymphatic-like spaces. As they extend more deeply into the tumor, they lose their cylindrical form and become of the well-known pavement-cell type. All stages can be traced from typical cylindrical cells about a lumen to masses of flat pavement cells, with the tendency to form epithelial pearls. The conclusion, therefore, seems justifiable that the epidermoid character of the epithelial elements is due to the ingrowth of glands from the surface, which have undergone a metaplasia due to limitation of growth offered by the surrounding tissues. Of the fact that the invading growth was originally adenomatous, and has undergone in part a metaplasia to cells of the squamous type there is every evidence. It is not easy, however, to determine whether its origin was primarily from the mucosa reflected over tumor or from the mucosa of uterine wall. The bulk of evidence is in favor of the former, for direct extension may be traced. On the other hand, the uterine wall opposite tumor contains small areas of atypical glands, and adjacent to these are alterations in the surface epithelium. It is possible that a small adenoma may have penetrated the tumor surface at a time when it was in contact with the uterine wall. This cannot be ruled out, as unfortunately only one piece of tissue was taken from this portion of the uterus. Sections from uterine mucosa elsewhere show normal arrangement of the glands. I am of the opinion that the origin was in the epithelium covering the surface of the tumor, and that this epithelium under unusual conditions of growth became altered in character.

Pathological Diagnosis.—Fibromyoma of the uterus invaded from the surface by an adenomatous growth, which, by metaplasia, has assumed the appearance of a squamous cell carcinoma.

Appended is a letter from Dr. Thomas S. Cullen, of Baltimore, to Dr. R. N. Pearce, Pathological Laboratory, University of Pennsylvania, Pa.:

"On examination of your sections I find that on the wall opposite to where the tumor was there is a well-defined adenocarcinoma originating in the endometrium of the body.

"The texture of the nodule resembles to a considerable extent myoma, and there is some hyaline degeneration. It is just possible that the myoma has been of such loose texture that the adenocarcinoma has grown into it. There are undoubtedly epithelial pearls in the growth. These may be due to a transition from the cylindrical to the squamous cell. If so, I have never seen such a typical example, but I have noted the cylindrical cells in an adenocarcinoma so altered that they resembled almost identically squamous epithelium. I have pictured several such instances in my book.

"I would advise you by all means to publish this case as it is one of a great deal of interest. Should you make any further observations in the matter I will be very much indebted if you will let me know."

Naturally the point of chief interest in this case is the origin of the cancerous growth which involved the myoma. The presumptive explanation is that it arose from an invasion of the tumor by an adenocarcinoma of the endometrium, and the change in the type of cell from that of adenocarcinoma to squamous cell carcinoma must be explained by the particular conditions present in this uterus. Changes from the usual type of epithelium in the endometrium to the squamous cell type have been noted by the various observers, and the point has been dwelt upon that such changes might lead to the development of cancer. Apparently in this case the cell was altered in the cancer itself.

THE ETIOLOGY AND PATHOLOGY OF APPENDICULAR INFLAMMATION.

BY

LOUIS FRANK, M.D.,
Louisville, Kentucky.

IN this paper, it is not my aim to go fully into the pathology of appendicitis in all its stages, nor to deal with the subject in every detail, neither shall I go into the clinical, or operative phases of the disease in its various manifestations. I trust no apology is needed from me, as a surgeon, for a paper along histological and bacteriological lines, in which studies I make no claims to expertness, but into which I have gone somewhat, believing it might be of much help to me in my clinical work. At the outset I wish to extend my thanks to Professor John E. Hays, of Kentucky University for his very valuable assistance in preparing a number of my microscopic slides.

To understand the pathology of appendicitis, to appreciate the changes which take place, their rapidity and their effects, it is not only necessary that we have a thorough conception of the anatomy of the structures as regards location, relation to cecum, to peritoneum, or as to blood supply and variations in direction in which the organ may lie, etc., but that we also have in mind the histological structure of the organ. The gross anatomical features have been so often and ably described, that I will scarcely touch upon them, but there are some features about the microscopic anatomy to which I wish to call attention. If we examine a normal appendix, we will find that the innermost structure is mucous membrane covered by columnar epithelium and presenting numerous glands dipping into the mucous membrane, these glands being also lined by columnar epithelium. These glands are embedded in a reticulum of cells which serve to support them and also to support the blood-vessels and the lymph channels which ramify between them. So long as the mucous membrane is intact, there can be no infection of the appendix from within, an important point to bear in mind. This layer also contains numerous large lymph follicles, which latter may extend through into the next two deep layers. To these lymph follicles we attach

great importance. In numbers they vary, there being often seen in a section as many as ten or twelve, and as few as only one. At the base of the lymphoid follicle, which is analogous to the solitary gland in the large gut, is an opening or space between it and the surrounding structures. This is the basal lymph sinus of Clado. Sometimes these follicles open directly on the mucosa.

Under the mucosa lies a very thin band of muscle passing around the gut, the muscularis mucosa, which contracting throws the mucous membrane into folds, giving the trifoliate appearance noted in microscopic sections. The next layer is the submucosa carrying the blood-vessels and nerves and composed largely of lymph spaces and channels. Outside of the submucosa is a circular layer of nonstriated muscular fibers which contracting serve to narrow the lumen of the organ and beyond this is the longitudinal layer of the muscular coat which is derived from the three longitudinal bands of muscular tissue of the colon and cecum, and which, at times, persists as three distinct bands even in the appendix.

The outer coat of the organ is the peritoneal which encloses the tip and splits about $\frac{1}{3}$ back of the tip to form the mesoappendix. Between the layers of the mesoappendix are the blood-vessels, and the lymphatics, the artery usually passing along the free border. These lymphatics are continuous with the mesenteric lymph glands emptying into them, and with others shortly to be mentioned. In the female a chain of glands passes from the appendiculo-cecal juncture along Clado's ligament to join the pelvic glands, a blood-vessel also passing from the ovarian artery to the appendix in this ligament.

"The lymphatics of the appendix enter the mesoappendix, where some of them pass through a lymphatic gland, situated at the ileocecal angle. Clado believes that this gland is constant, and he describes and figures it as 'the appendicular gland.' From the mesoappendix the lymphatics enter the mesentery and then pass onward. A small gland at the ileocolic angle, and beneath the fossa, is constant. Frequently in disease of the appendix there is found a chain of inflamed lymphatic glands along the inner side of the right colon, behind the ascending mesocolon, from which it is concluded that this is the course which the appendicular lymphatics mainly pursue.

"The arrangement of the appendicular lymphatics is of surgical and clinical importance.

"The lymphatics also communicate directly with those in the iliac fossa, along the course of the external iliac artery.

"Clado, in his able memoir, gives the earliest description of the passage of the appendicular lymphatics into the pelvis. On two occasions he saw infection pass from the appendicular lymphatics to the utero-ovarian. He considers this an explanation of the extension of purulent inflammation from the broad ligament to the cecum, and *vice versa*.

"The peritoneal covering of the appendix, as seen in sections, varies in thickness from half to one millimeter, and is almost invisible to the naked eye. When the appendix is empty and contracted, its outline is wavy. The endothelium covering its surface is supported by a basement membrane of extreme thinness. The rest of the peritoneum is a very delicate tissue of branched nucleated cells, waving fibers, elastic fibers, blood-vessels, nerves and lymphatics. The delicate connective tissue penetrates between the fibers of the outer longitudinal muscular coat, carrying with it minute blood-vessels, nerves and lymphatics.

"The peritoneal coat of the appendix is continuous with the mesoappendix. Under low power of the microscope, it looks as if the mesoappendix split to embrace and encircle the appendix. But, in addition, the subperitoneal tissue and the blood-vessel, nerves, and lymphatics which it contains are very intimately connected with the submucosa. This union takes place at certain gaps in the muscular coats.

"These gaps serve for the transmission of blood-vessels, nerves, and lymphatics from the mesoappendix to the mucous coat. They are situated at the junction of the mesoappendix with the appendix. In a specimen of an inflamed appendix the gap, foramen, or hiatus is more than a millimeter wide, and can be clearly seen with the naked eye. In sections the continuity of the inflamed submucous and subperitoneal coats is seen with the greatest clearness. The full significance of this fact becomes apparent, when we know that the mucosa and submucosa are so often the seat of bacterial invasion.

"Owing to the arrangement of the blood supply the part of the appendix which has a mesentery has the best blood supply, whilst the free end has the worst and most precarious. The part of the circumference of the appendix farthest from the mesentery is also less well supplied than the mesenteric side. A calculus, distending the lumen, might cut off the arterial supply of all the part beyond it, or might prevent the return of its venous

blood. The free end must also be more liable to suffer from mechanical obstructions to its vascular supply when the appendix gets bent or kinked. The minute size of its vessels probably renders stasis more likely to occur when the appendix is acutely inflamed."

Having drawn attention to the principal factors which play a part in rendering the appendix so susceptible to rapid spreading infection, involving the peritoneum or the lymphatics, it would be well to study these processes themselves. As preliminary to describing the changes which take place and which to some extent have been taken from the specimens presented, I would say that I am in accord with Deaver, Lockwood, and others who agree that we cannot classify appendicitis pathologically upon a basis of our anatomical finding at the time of the operation. If any classification is to be made it is to be along the lines of cause rather than effect; so we may recognize a tubercular appendicitis a typhoidal form of the disease, or a secondary or complicating form following inflammation of the uterine appendages for instance, or, just a simple, ordinary appendicitis. The classification of catarrhal, suppurative, perforative, gangrenous, etc., is pathologically all wrong. It may do clinically or even from an hematological standpoint, but to say that there is a form that is always catarrhal, another suppurative, or gangrenous is not true, as these are merely manifestations, or stages of one and the same sort of disease, appendicitis. We can not even clinically always recognize the changes taking place in the organ, so it is better to speak of all cases merely as inflammation of the appendix with suppuration, with rupture, with abscess, etc. This conveys a correct clinical and pathological idea of the condition we may have before us.

Causes of Inflammation of the Appendix.—In all cases whether the cause operate from without as from embolus, twisting, hernia, etc., the one and sole cause of inflammation itself in the appendix is bacterial invasion. Without micro-organism there would be no pus, no peritonitis, nor even a death, no matter how the blood supply might be affected. Myriads of bacteria are constantly found in all parts of the appendix, and the least lowering of resistance of the cells covering the lymph follicles or even lining the tubules of the mucous membrane permits infection of lymphatic follicles or channels, and probable rapid dissemination through the *hiati musculari* to the muscular and peritoneal coat, through the lymphatics to near and distant regions, resulting in post-cecal or even subphrenic abscesses and that, without even

marked local symptoms or apparent pathological changes about the appendix.

For bacterial invasion loss of epithelium or great lessening of its vitality is necessary, and we find this to be true in all cases examined. Having once entered the lymph channels the organ is doomed, and though it may have been years since the bacterial entrance, they will be found upon examination, unless the inflammation has resulted in obliteration or sometimes mucocele. The essential factor in all inflammation is bacteria, and no matter how active the predisposing cause may be, how severe or extensive the torsion of an organ, or how large the embolus present, so long as we exclude pus micro-organisms, no peritonitis nor pus will be found. This we do not question, when applied to external parts or to our operative wounds, and its force must then be equally potent in the case of the appendix vermiformis. As stated above, we believe that with the exception of occasional cases, in which the infections are secondary to lesions elsewhere as tubercular, typhoidal, or tubo-ovarian, for instance, in which case the course of infection may be through the blood or lymph channels, all infections are directly from the lumen of the organ and are through abrasions in the mucous membrane or through the lymph follicles.

Extent and Character of Disease.—The extent of the local process is due then to the quantity and quality of the infective agent, to its rapidity of dissemination through lymph channels to the glands, or to the peritoneum, and further to the condition of the appendix itself, by which I mean, whether or not it has been previously inflamed.

Mild Infection.—The mildest forms of infection are seen in those cases called catarrhal, which is, in my opinion, a misnomer. The cells are not merely overactive or oversecretive, as may be seen in other mucous membranes as the result of increased or excessive blood supply, or as the result of irritation. But here we have true infection which, however, being held in abeyance by phagocytosis or being mild in its activity, soon apparently subsides. Examination of these organs after removal, either at the time of the attack or at a later period, will show to the naked eye no changes; it may be thought to be normal, but microscopically, we find denudation of epithelium or true ulceration of the mucosa, the submucosa and lymphatics, especially about the mesentery, filled with bacteria. With even this mild degree of infection, the micro-organisms may be carried through the lymphatics under

the cecum and colon resulting in subphrenic or pleural abscess.

Sonnenburg observed nine subphrenic abscesses among 600 cases of appendicitis. In 350 of the patients there was an abscess around the diseased appendix, and nine of these patients had rightsided subphrenic abscess ($2\frac{1}{2}$ per cent. of the abscess cases).

Subphrenic inflammatory processes secondary to disease of the vermiform appendix may occur as a local process by direct extension, or through the lymph channels, from disease in or around the vermiform appendix. As Eusberg shows, this is the most frequent manner of infection in cases of subphrenic suppuration, he having operated upon two such in 91 cases of appendicular disease. Quite a large percentage of these cases are secondary to appendicular disease. The very mildest forms of infection are therefore a dangerous factor to the patient, for even if such disastrous results do not follow, there remains in the belly an organ infected and in which now the least disturbance, by pressure, torsion or other violence, no matter how slight, may cause to take on activity resulting in early and rapid infection of the peritoneum either by rupture or by direct extension through the lymph channels.

Appendicitis with Abscess.—This is only a further stage of the previous (catarrhal [?]) condition. There may be an abscess about the appendix, even surrounding or enclosing the organ, as it were, without any rupture existing, the source of the pus having come through the *hiatus muscularis* to the peritoneal coat. This stage may be present within twenty-four hours after the onset of the attack. Frequently we find the peritoneal tissue covered by bacteria, the subperitoneal structure being also rich in them.

This abscess or suppuration may, however, communicate directly with the lumen of the appendix though microscopic ruptures in the walls. This minute rupture may be of a small abscess in the wall, this abscess, millet seed or smaller in size, intervening between the rupture or opening into the lumen and also through the peritoneum just as, for instance, we find a lake in the course of a river or stream. The openings need not be opposite one another, and it may be that some search may be needed to find one or the other opening. Or again the communication between the minute abscess and the infected mucosa may have been by ways of the lymph channels

Appendicitis with Rupture or Perforation of its Walls.—Large

ruptures as well as gangrene result from rapid virulent and extensive infection either in the primary or some subsequent attack. This can be best illustrated by specimens. True it is, that in a large number, probably a majority of the cases of perforation of the appendix, an enterolith, or fecal concretion is found, but I do not hold the relation as a strictly causal one. I am inclined to believe that in a large number of cases the occurrence of the rupture is in no sense dependent upon the concretion, but that both have been produced by the same causes, operating repeatedly or for a long time. Concretions are found in many appendices which have not ruptured, which, in fact, seem to be only mildly or slightly diseased. In the normal appendix, however, concretions are never found, and whenever present the organ shows changes, and also the presence of infective agents in its walls, and the relationship is not one merely of coincidence. As a matter of fact, the same processes which produce the appendicitis cause the fecal concretion, the presence of the latter meaning always chronic appendicitis.

It would seem that the concretion is formed in the following manner: The dead epithelium, bacteria and the pus left in the lumen of the appendix after an acute attack of inflammation become agglutinated, possibly somewhat dried out, and that later fresh fecal matter finding its way into the organ becomes adherent to it or deposited, as do also phosphatic and calcium salts, in concentric layers upon this nidus which has been formed. This arrangement can often be observed upon bisecting the coprolith. In their center is found the bacterial nidus forming the nucleus of the mass. This has been often demonstrated and can, we think, be accepted as true. So we believe that it is the old disease, the chronically involved walls, weakened by inflammation, thickened, but friable from round-celled infiltration, with an infected sub-peritoneal area and impaired circulation that is the cause of the rupture, and not the mere presence of the concretion. That the concretion in a few instances may act as a causative factor in relighting old trouble, with consequent perforation, is also true as mentioned in another part of the paper. The reason we find the perforation opposite or at the seat of the concretion, however, is because this is the location of an old chronic ulcer, and the point of greatest infection is also at this location.

The walls of the appendix complicated with rupture or abscess are the seat of extensive round-celled infiltration. The lymphatics

and often the veins and sometimes the arteries are filled with bacteria.

In gangrene the microorganismal infiltration is so widespread and extensive that a rapid general necrosis or death takes place in all the coats, the cells being overcome by bacterial poisoning and the whole becomes melted into an homogeneous mass, so that microscopic examination shows no differentiation of layers or structures. Contour and definition are lost, though the specimens stained for bacteria may show the walls rich in them, in fact, the wall may seem a mass of bacteria with here and there portions of a normal or fatty degenerated muscle fiber, the remains of the longitudinal or circular muscular coat, or, the necrosis may have been so rapid that the microorganisms are destroyed by their own toxins and not found on examination.

229 WEST CHESTNUT STREET.

THREE NEPHRECTOMIES, PRESENTING FEATURES OF INTEREST TO THE GYNECOLOGIST.¹

BY

REUBEN PETERSON, M.D.,

Ann Arbor, Mich.,

Professor of Gynecology and Obstetrics, University of Michigan.

(With four illustrations.)

NEPHRECTOMY can hardly be classed among gynecologic operations. Yet the three cases reported below, occurring in my practice in the past six months, show that the gynecologist is not infrequently called upon to perform the operation.

Case I. Partial removal of uterine growth. Ten years later, removal of a cystic kidney caused by compression of ureter by large pelvic tumor, which was shown microscopically to be a cylindroma. In January, 1894, I removed from Mrs. L., aged 41, a hard immovable tumor, connected with the uterus and rising above the pubes. At the same operation a left ovarian cyst the size of a cocoanut was removed. The uterine growth was densely adherent, and had grown between the folds of the right broad ligament. Attempts at enucleation gave rise to such severe

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hemorrhage that its complete removal was deemed impossible. I contented myself with the use of the hysterectomy pins and extraperitoneal treatment of the stump. By estimation, about a quarter part of the tumor was left behind in the broad ligament. Patient made a slow, but apparently complete recovery. As the tumor was supposed to be a common fibroid growth no microscopic examination was made. Nearly ten years afterward, in July, 1903, the patient consulted me at the University Hospital. She gave a history of having been fairly comfortable since her operation, with the exception of occasional abdominal pain. Eight months before entrance, she noticed a swelling of the right leg.



Fig. 1.—Hydronephrosis due to compression of right ureter by a retro-peritoneal sarcoma.

About this time a tumor, gradually increasing in size, appeared on the right side of the abdomen. She has lost flesh, being from 20 to 25 pounds lighter than she was a year ago. Lately she has had severe pains in the right foot. Although the abdominal swelling has been increasing within the last six weeks, she has had no particular pain in that region. She has never had any blood in the urine, nor has she passed abnormally large amounts.

Examination at entrance showed the abdomen to be irregularly distended, more on the right than on the left side. (Figure 1.) There was a cicatrix extending from the umbilicus to the pubes, with irregular branching cicatrices at either side. There was a

three-inch hernial opening at the lower portion of the cicatrix, the edge of the opening being sharply cut. The bowel could be seen and felt just beneath the skin. There was an abdominal tumor reaching from the anterior superior spine 5 cm. beyond the median line. It extended into the right flank and under the ribs. The tumor was somewhat movable and could be pushed slightly downwards and laterally. It was quite elastic and had a slightly cystic feel. It did not seem to have its origin in the pelvis. The right leg was considerably swollen from the groin to the toes. The skin was reddened, edematous and very tense. Bi-manual examination showed the pelvis to be completely filled with a hard, irregular, immovable, sensitive mass. Examination of the urine showed specific gravity 1024, color turbid, reaction acid, albumin one-fifth by volume, no sugar. Microscopic examination showed pus, epithelial cells and calcium oxalate crystals. Examination of the blood showed 85 per cent. hemoglobin, red blood cells 4,600,000, and whites 6,000.

Diagnosis.—The presence of a hard, immovable pelvic mass associated with a fluid tumor, having its origin from the right flank, led to the diagnosis of compression of the right ureter with resulting cystic kidney.

Operation.—July 17, 1903, showed this diagnosis to be correct. An incision was made to the right of the old cicatrix, just above the edge of the hernial ring. The tumor mass was found to be retroperitoneal. The peritoneum was cut through and the intestines pushed to one side and held away by packs. The tumor was kidney-shaped, multi-lobed and cystic. It was carefully raised from its bed and the renal vessels isolated and tied off with silk. The ureter was enormously dilated and formed part of the tumor. Just below the pelvis the ureter was compressed by a hard mass, retroperitoneal lying just to the right of the aorta. The vena cava was enormously distended. The hard mass could be traced into the pelvis. It extended more to the right than to the left. It was perfectly immovable, and, as it involved the great vessels, its enucleation was thought inadvisable. A small piece was removed for microscopic examination. The ureter was tied off with silk and the retroperitoneal space was not drained. The incision was closed with tier sutures of catgut, with silkworm gut for the skin.

Pathologic Report.—The specimen consists of a greatly dilated right kidney and a small piece from growth in pelvis. The kidney measures 23 x 14 x 8 centimeters. The parenchyma has

disappeared, leaving only the greatly dilated capsule. The capsule is very thin, translucent and filled with a clear, lightish fluid having a slight odor of urine. The kidney is lobulated and what corresponds to its cortex. The microscopic examination of the small piece from pelvic tumor shows large numbers of embryonic small spindle cells in direct contact with the vessel wall with a hyaline deposit within the capillaries. Diagnosis, sarcoma.

The interest in the case centers chiefly in the histologic character of the pelvic growth. It is unfortunate that no microscopic examination was made of the portion of the growth removed at the first operation. There is every reason to believe that at that time the pelvic growth was not a fibroid, but a sarcoma slowly growing, but distinctly malignant in type. It shows the importance of subjecting all tissue removed to microscopic examination, no matter what the macroscopic appearance may be. The prognosis in this case is distinctly unfavorable. The operation has for some unexplainable reason benefited the patient. The patient dated October 11th, her husband states that she is much better and that while there is still considerable swelling of the right leg the upper part of the leg is much smaller. Why should this be so? The pelvic growth was immovably fixed in the pelvis and surrounded with the large vessels. Only a small piece was removed for examination. The removal of the cystic kidney could have relieved the pressure on the vessels lower in the pelvis. Could the mere opening of the abdominal cavity have any effect on the growth? Possibly, for I have seen improvement follow a laparotomy incision in other cases where nothing was removed.

II. *Tuberculosis of right kidney and bladder. Nephrectomy. Death six weeks later from tubercular meningitis.*

W. S., aged 41, American, married; was admitted to my hospital September 28, 1903. Her family history was unremarkable. Menstruation appeared at the age of 16. She has never been very irregular, duration three days, amount normal. She has never had any leucorrhea. Patient has been married 15 years and has had two children, the older 19 and the younger 17. She has never had any miscarriages. She has always been very strong and well, with the exception of an attack of hematuria and hemorrhage from the bladder six years ago. The hemorrhage at this time was quite severe. She was sick for a few months, but gradually recovered her health. The present illness dates back to April 10, 1903, when she began to have

pain in the right side and in the urethra. At this time hemorrhage from the bladder, which has recurred twice. The hemorrhage continued for several hours, and subsequently the urine contained clots for a while, but finally became clear. She was operated upon July 10th and August 19th. The ureter was dilated and small growths removed. The past few months the patient has suffered excruciating pains, referred to the right side and meatus. These pains are paroxysmal and so severe as to compel the patient to roll in agony, cast herself upon the floor and strain down. These attacks come a number of times a day. Between the attacks the patient has very little pain and is fairly well. She has been confined to the bed, however, since the time since April.

The patient was examined under chloroform the day following the operation. Vaginal examination showed the uterus and adnexa to be normal. The right ureter could be felt through the vaginal fornix, hardened and the size of the little finger. It was traced from its entrance to the bladder to the side of the bladder. The right kidney was enlarged and dislocated downward. The left kidney could not be felt. The bladder was washed with a boric acid solution and examined with the cystoscope. The bladder mucosa was greatly injected and covered with numerous projections. These projections varied from two to five millimeters in diameter. They bled easily when touched with the probe. The presence of these masses prevented the location of the ureteral openings. A small portion of one of the growths was removed for microscopical examination. The condition of the patient became markedly worse after the examination under chloroform. There was great pain in the region of the right kidney and frequent paroxysms of pain in the right side and in the urethra. These pains were controlled only by the administration of large doses of morphine. The temperature and pulse became elevated. There was great tenderness over the right kidney and the tumor could be distinctly mapped out through the anterior abdominal wall. The temperature and pulse gradually became normal as they were only slightly above normal at the time of operation. On October 15th. Microscopic examination of the tissue removed from the bladder showed it to be tubercular. Examination of the urine showed specific gravity 1014, reaction acid, a small amount of albumin, no sugar, no casts. There was a small amount of sediment composed chiefly of pus. Unsuccessful attempts were made to find the tubercle bacilli in the urine.

Diagnosis.—The diagnosis in this case was not particularly difficult. The patient evidently had tuberculosis of the bladder, ureter and kidney. Inability to locate the left ureteral opening made it impossible to determine the integrity of the left kidney. There were no signs of tuberculosis outside of the urinary tract. It was decided to at least make an exploratory incision in the lumbar region and possibly remove the kidney and

Operation.—October 15, 1903, a U-shaped incision was made in the right loin beginning at the tip of the eleventh rib, its contour following within five centimeters of the spines of the vertebræ, turning in an upward direction toward the right anterior superior iliac spine. The peritoneum was exposed but not opened. The edge of the liver could be easily palpated and seen beneath the thin peritoneal covering. The gall bladder was enlarged and filled with stones. The ascending colon curved toward the median line, the perinephritic fat exposed through the incision. The fatty capsule and tissues were adherent to the kidney in places. The kidney was enlarged, bluish in color and soft. It was freed and delivered through the incision. The upper part of the kidney and upper part of the ureter were dilated to the size of the thumb. The contents of the ureter were expressed toward the pelvis of the kidney and a silk ligature applied about one centimeter below the latter. The ureter was dilated and its walls were not thickened. A second ligature was passed above the first and the ureter severed between, its end cauterized with nitric acid and dropped. The renal vessels were tied off and the kidney removed. The wound was closed with sterilized silkworm gut sutures. A gauze drain was introduced into the bottom of the wound. The patient stood the operation well, there was but little shock. The following day her temperature rose to 103°. The removal of the gauze was followed by a considerable gush of bloody fluid. A rubber drainage tube was inserted into the bottom of the wound. This was followed by a rapid fall in the temperature. The patient passed urine freely and without pain a few hours after the operation. The drainage tube was removed on the sixth day and, with the exception of the opening left by the tube, the wound healed by first

Pathologic Examination.—The kidney measures 11 x 7 x 4 cm. The surface is very irregular, especially at the poles. The capsule is adherent and there is only a moderate

amount of pelvic fat present. At the upper pole the kidney is soft, of a dark reddish color, with small, rounded, easily depressed elevations, 1 centimeter in diameter. On section the cortex is seen to be 8 millimeters thick, the outline between the cortex and medullary rays being distinct. The pelvis of the kidney is slightly dilated, the mucosa being covered with numerous pin-point nodules, clear and glistening. At the lower pole the apices of the pyramids are replaced by small cavities from one-half to two centimeters in diameter, lined with dirty white granular material. The entire parenchyma of the upper pole is replaced by numerous cavities from one to two millimeters in diameter. Their walls are reddish, irregular and granular. Microscopic examina-



Fig. 2.—Right kidney laid open showing tubercular abscesses in parenchyma.

tion of sections from the edges of the cavities and nodules show tubercles in their earlier and later stages.

At first, after the operation, the patient improved markedly. The pus in the urine diminished. She suffered but little pain, temperature was only slightly above normal and she was able to retain the urine three hours. Four weeks after the operation, after the complete healing of the wound, the patient began to complain of severe headache which no medication seemed to relieve. The temperature rose gradually, symptoms of meningitis developed and the patient died December 3, six weeks after the operation. No autopsy could be obtained.

The tubercular disease was probably of long standing in this case, and may have dated back to the hemorrhage from the bladder, six years previously. It progressed slowly with long periods

mission, when the patient hardly had a symptom. It originated in the right kidney and the bladder was secondarily. Bladder tuberculosis almost invariably gives increased frequency of micturition and changes in the constituents. These were late manifestations in this case. The bladder was dilated but its walls were not thickened macroscopically. This probably would have been the case had the distention extended upward from the bladder. There is no reason to think that the left kidney was seriously involved. At no time were symptoms referable to this kidney, and after the removal of the right kidney there was no diminution in the 24-hour output of urine, showing that the left kidney had been doing its work for both for some time.

I thought best not to remove the right ureter, because the condition of the patient was not of the best and because of the possibility of thickening of the ureteral walls. Experiments on the animal had convinced me that the Kelly incision for nephrectomy is unnecessarily long. Through the U-shaped incision mentioned above, the ureter could be traced downward to its origin beneath the broad ligament. To remove this portion of the ureter, a second incision along Poupart's ligament would have been preferable to a large primary incision. The peritoneum could have been reflected inwards and the dissection made entirely extraperitoneally.

II. *Cystic right kidney, mistaken for an ovarian cyst. Removal through median abdominal incision. Recovery.*

Case No. 2, aged 64, widow; referred by Dr. J. S. Shoemaker, of Ann Arbor, Mich., entered my private hospital November 18, 1901. The patient has always enjoyed good health until about a year ago when she began to suffer from headache and pain in the right upper abdominal region. She feels sick to her stomach and there is a feeling of fullness there. Has noticed she was growing larger for the last three months.

Examination.—(Figure 3.) Examination at entrance showed the patient to be an extremely thin woman. The arteries were normal. The abdomen was irregularly distended and was covered with atheromatous plaques. This mass was reaching from the pubes to the epigastrium. This mass was more prominent on the right than on the left side. On the right it extended from the anterior superior spine to the border of the ribs. It also reached beyond the median line, to within 3 centimeters of the left anterior superior spine and within 3 centimeters of the border of the ribs. There was protrusion of the

umbilicus. The abdominal veins were distended, especially over the right groin. Over certain portions of the tumor, to the left of the median line, the peristaltic movement



Fig. 3.—Cyst of right kidney.

testines could be seen plainly. Over the same area the percussion note is distinctly tympanitic and the intestinal coils palpated distinctly. The tumor was slightly movable and elastic. No fluid wave present. Vaginal examination



Fig. 4.—Cyst of right kidney.

factory, because of sensitiveness and contracted vaginal examinations of urine and blood were negative.

Operation.—November 19, 1903. At the time of operation the tumor occupied the median line of the abdomen. The intestinal coils were low down on the left side. An abdominal

ed the tumor to be retroperitoneal, the cecum being in front
d to the left of the tumor. The mass was cystic and lobu-
and arose from the right flank, and had no connection with
elvis. The posterior peritoneum was incised, the kidney
lly enucleated from its bed, the ureter and vessels tied and
umor removed without rupture.

Pathologic Report.—The kidney measures $24 \times 15 \times 10$ cen-
rs. The portion corresponding to the pelvis of the kidney
res $15 \times 10 \times 10$ centimeters. (Figure 4.) The kidney con-
f a fibrous capsule, which is thin and translucent. The
thyma has entirely disappeared. The portion correspond-
the cortex of the kidney consists of two rows of lobules of
ch. The contents are thin, serous, and light yellow, with a
urinary odor. The ureter is patent. Diagnosis, hydro-
osis.

patient has made an uninterrupted recovery and leaves the
al this week.

s case shows how easy it is to be mistaken in the diagnosis of
bdominal growths. This can only be avoided by consider-
ery possibility and excluding the least probable. My find-
efore the operation were perfectly correct and should have
the diagnosis of a retroperitoneal growth. Had the pa-
een younger and the vagina less atrophied, bi-manual ex-
ion probably would have shown that the cyst did not arise
he pelvis. But after all, it was not lack of knowledge, but
lure to apply such knowledge, that was responsible for the
diagnosis.

THE IMMEDIATE REPAIR OF LACERATIONS AFTER LABOR.¹

BY

STRICKER COLES, M.D.,

Demonstrator and Clinical Lecturer on Obstetrics in the Jefferson Medical College;
Assistant Obstetrician to the Jefferson and Philadelphia Hospitals.

(With four illustrations.)

WHEN appointed Demonstrator of Obstetrics in the Jefferson Medical College, I could find nothing in this country or abroad for demonstrating the repair of lacerations that suited me and was within my means. It occurred to me that a soft, thick felt could be moulded into a manikin, giving a vaginal outlet, vagina and uterus, which could be used repeatedly before small classes with very slight expense. They were made to fit into a pelvis to make them more manageable and real. These I have used for the last five years and have had photographs of them made, showing the stitches after they had been placed. The lacerations of different degrees were made in the felt and covered with red silk to make them more noticeable. This the photograph does not show. The only way to learn to repair lacerations is by closing them in the living patient; but this method gives the student a very good idea of how the sutures should be passed.

The frequency of lacerations of the pelvic floor and perineum is variously estimated by different authorities, from 5 to 10 per cent. in multiparæ, and from 25 to 50 per cent. in primiparæ. This estimate in my experience is entirely too low. In each case I deliver, the patient is brought to the edge of the bed and the parts are thoroughly inspected by placing the middle finger in the rectum and bringing forward the posterior vaginal wall. I consider a laceration which extends .5 cm. deep and 1.5 cm. long, of sufficient importance to be closed whether it involves the mucous membrane or skin. I believe that if every case is carefully inspected, lacerations of the size mentioned above will be found in 75 per cent. of primiparæ and in 25 per cent. of multiparæ. I refer to those multiparæ who have had lacerations closed

¹Read before the Gynecological Section of the College of Physicians, December 17, 1903.

each delivery. The cases that have not had perineal lacerations closed have very little perineum left to be lacerated, and these cases 5 per cent. may be a fair estimate. I have always made it a rule to go prepared to repair any laceration that may occur.

I always carry sterile chromicized catgut, and when preparing for the labor, sterilize silkworm gut, needles, and suture-holder with the other instruments. If we wait until after delivery and then have to make preparations for closing the laceration, many will be neglected.

The time for closing lacerations is immediately after labor, and I have done this in every case. A case may require stimulation and not be able to stand immediate operation, but so far I

Fig. 1.



have not seen such a case, for it takes a very few minutes when the instrument is at hand for the operation. I cannot agree with those who advise waiting for involution, etc., but firmly believe that immediate repair is best. Often in neglected cases after prolonged labor, the tissue will be swollen and edematous, and the result will not be good, and a secondary operation may be necessary. The result will be better after immediate closure than after a secondary operation than after waiting for involution and allowing the muscles to retract and the parts to lose their normal relation. The cardinal point in closing lacerations is to bring the tissue in direct apposition, bringing muscle to muscle, fascia to fascia, and mucous membrane to mucous membrane and skin to skin, and this can only be done, if the muscle

is torn across and has retracted, by catching the ends and pulling them together, and when the tissue has not retracted, passing the needle in a circular direction around the tear so that the needle will not come into view until it comes out on the opposite side, remembering that when the ligature is tied it will form an ovoid, and there will be a pulling in of the tissue. It is not direct apposition unless the needle is passed circularly.

In closing lacerations of the cervix, always remember that immediately after labor the cervix is much longer than it will be forty-eight hours afterwards, so that the stitches should not be too close together or too close to the lower edge of the cervix. To close a cervical laceration grasp both lips with

Fig. 2.



the vulva with the vulvar forceps and draw the cervix down and slightly to the left side. Then with the index finger in the tear and the thumb and middle finger on each side, guide the point of the needle through the uppermost part of the tear and then down to the lower part, not through the mucous membrane, using interrupted circular catgut sutures. Usually two are sufficient, as shown in Figure I.

Lacerations in the anterior vaginal wall often bleed profusely on account of the large plexus of veins in this region. To close these and stop the hemorrhage, take in a large amount of tissue and be sure not to include or injure the urethra. Slight lacerations of the posterior vaginal wall should be closed by introducing the middle finger into the rectum while the ring and index fingers separate the vulva. Begin at the uppermost part of the tear and entirely encircle it, coming down a little, pulling up again and be careful to have the needle come out on

which it was introduced. This can be verified by noting the distance from the remnants of the hymen on each side. One may then pass sutures in this way until the last stitch is just above the remains of the hymen. These sutures should be introduced and of chromicized catgut. The skin part of the tear should be closed with silkworm gut, starting at the anus and coming outward, taking a large amount of tissue in a circular manner. The last stitch, as shown in Figure II., is the only one showing a laceration, but this would not be seen if the catgut sutures were used. After all the sutures are placed, the finger can be removed from the rectum and washed, and then the sutures can

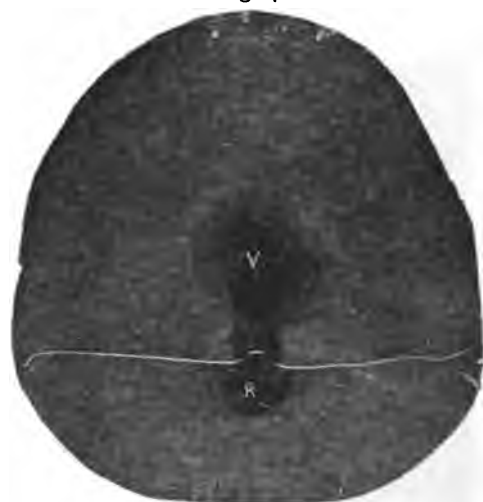
Fig. 3.



as shown in Figure III. The catgut sutures should be introduced and the silkworm gut stitches brought together, twisted and tied in a knot and placed at one side of the vulva. Should the laceration be deep, extending well up one or both sulci and involving the levator and sphincter ani muscles, the first thing to do is to make it a superficial tear by placing catgut sutures first in the ends of the levator ani and bringing them together, then lower down, approximating the torn ends of the sphincter. This suture should be passed downwards and outwards through the ends of the muscle on one side; and the needle then introduced and the ends of the muscle on the opposite side caught up in Figure IV. When this suture is tied, it will bring the ends of the muscle into direct apposition. The rest of the

laceration should be closed as if it were a simple tear. If the laceration is complete, first close the rectum with a chromicized catgut suture, so passing the suture that it will be in the rectum, as it will be infected and if passaged superficially, will not carry the infection into the laceration. Next the deep buried sutures through the torn ends of the rectum and then close as in a simple tear. When all sutures are introduced and tied, the parts should be flushed with one per cent lysol solution and dusted with powdered boric acid, and repeated after each urination and defecation. In complete lacerations the bowels should be moved only after three days, and

Fig. 4.



sulphate of magnesia and injections of sweet oil. The worm gut is removed on the seventh or ninth day, depending on whether they cut or not. My results have not been particularly satisfactory in repair of lacerations of the cervix. In some cases the union has only been partial and in others it was a complete failure, but in a large majority union has been good. Those with lacerations of the pelvic floor and perineum have been good in almost all cases, the union occurring primarily in the rectum. In only a very few cases was there only partial union. In a complete tear, the result in every case has been good. In some cases, there was a recto-vaginal fistula, but this closed spontaneously in from five to ten days.

My work has not been confined to those cases in the

my private practice, but to the poor classes attended from the poorest department of the hospital, where often hot water was hard to get and sterile dressings out of the question, but the results in these cases were much better than I had expected.

Often patients of this class refuse to allow the lacerations to be closed, so I have been informed by assistants or students, personally I have always succeeded by threat or entreaties. I am glad to say is not the case with the better classes. I expect to be lacerated and often demand that sutures be placed, and should the woman be ignorant and the obstetrician neglect his duty, she will be duly informed by the first gynecologist she consults.

CONSIDERATION OF COMBINED ECTOPIC AND INTRAUTERINE PREGNANCY, WITH REPORT OF CASE.

BY

F. F. SIMPSON, M.D.,
Pittsburg, Pa.

(With three illustrations.)

INTRAUTERINE pregnancy occurs so frequently that the report of a single case must have some valid *raison d'être*. It seems of great interest that a patient should contract gonorrhea; that she should conceive coincidentally in the uterus and tube; that she should have rupture of the tube with a classical picture of ectopic pregnancy; that the products of misplaced conception should be removed by abdominal section, and that she should have a rapid convalescence, go to term, and give birth to a healthy child. Such, briefly, is the case I have to relate.

Very interesting questions, some of them intensely practical, are presented by those victims of ectopic gestation who are also pregnant. They relate chiefly to the types and frequency of this condition, to its diagnosis, to the errors that have been made, and to their bearing upon rational lines of treatment. For convenience, the term "compound pregnancy" will be used to express the combination of ectopic with intrauterine gestation. The etiology of this condition is that of simple ectopic gestation and need not be referred to here. A study of the recorded

cases appearing in literature, however, reveals such essential differences in their course as to require a grouping of the instances into various classes, to-wit:

Compound pregnancy, Class I. The woman becomes pregnant while carrying the dead products of an ectopic gestation.

Compound pregnancy, Class II. The ectopic and intra-uterine products of conception are both living at the same time. These cases are naturally divided into three groups, according to:

- (a) Ectopic conception precedes the uterine.
- (b) Ectopic conception follows the uterine.
- (c) Ectopic and uterine conception occur coincidentally.

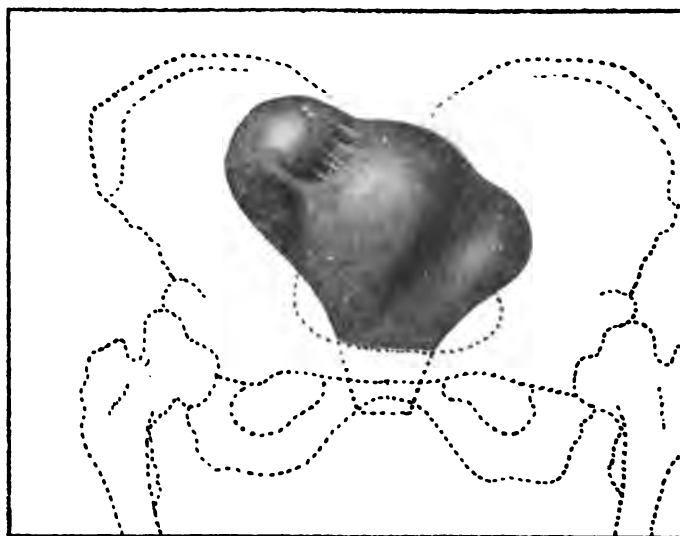
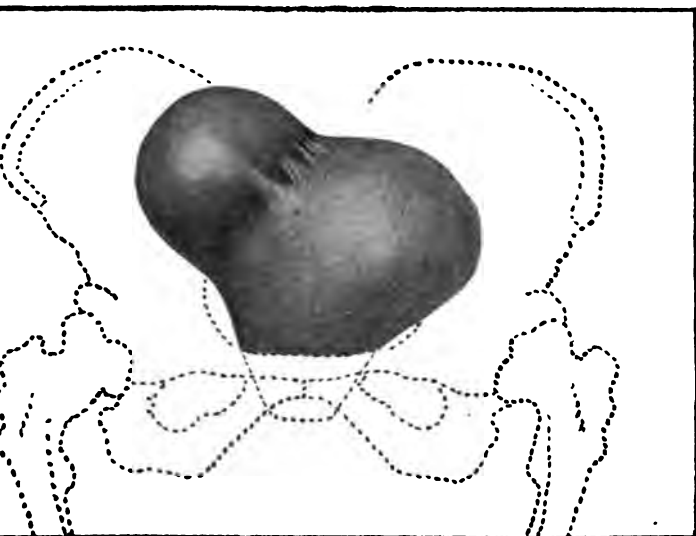
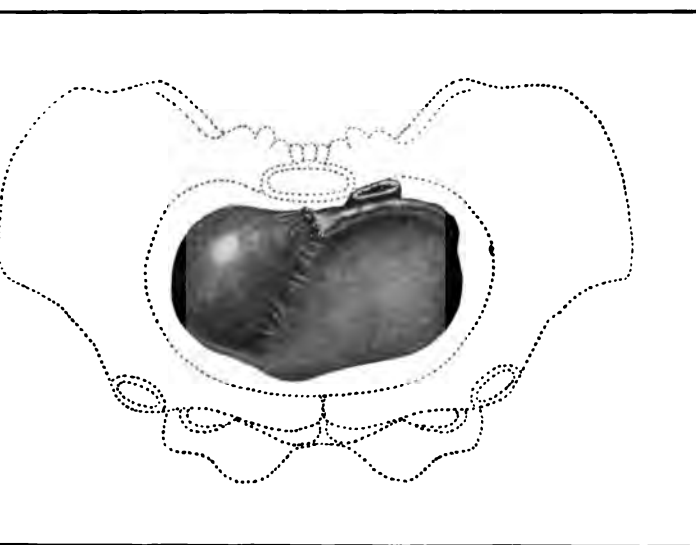


Fig. I.—Illustrates irregular contractions of uterus in case of normal and ectopic pregnancy. Ectopic removed, uterine went

Class I. includes the available cases in which the ectopic was clearly dead before uterine conception occurred. From a large number of cases in which the products of misplaced pregnancy have been retained for years at varying degrees of development and preservation it seems highly probable that many cases are not included in the list here given. This might happen if the title of the article failed to indicate that a compound pregnancy existed. I have been able to collect only six cases, though Parry (88) found twenty-two in a series of ectopics studied.



—Relations of ectopic and uterine pregnancy as found at operation.
Ectopic removed, uterine went to term.



I.—Relations of ectopic and uterine pregnancy as found at operation,
showing adhesions. Ectopic removed, uterine went to term.

No.	Reported by	Year Occurred	Year Pub.	Age of Mother	Para	Duration of Pregnancy		Result to—		
						Intra-uterine	Extra-uterine	Mother	Intra-uterine Fetus	Extra-uterine Fetus
1	DeBelamizaran, Z.	1836	1838	35	VI	9 mos.	?	Rec'd	Lived	Died
2	Bossi	1865	1867	25	IV	29 wks.	9 mos.	Rec'd	Lived	Retained
3	Haderup	1866	?	24	I	9 mos.	4 mos.	Rec'd	Lived	Retained
4	Day, E. E.	1863	1865	?	V	?	3-4 mos.	Died	Still born	Died
5	Ribot,	1873	1876	37	III	9 mos.	?	Rec'd	Lived	Retained
6	Lamy	1872	1876	?	Mul- tipara	9 mos.	9 mos.	Lived	Lived	Died; re- tained later dis- charged
7	Köhne, W. H.	1886	1887	?	Nulli	9 mos.	?			
8	White, J. H.	1886	1887	37	I	7 mos. induc'd d'liv'ry	8 mos.	Died	Died	Died
9	Gutzwiller, D. H.	1891	?	35	III	3 mos.	8 mos.	Lived	Abort'd 3 mos.	Died
10	Mathewson, H. P.	1894	1898	30	Mul- tipara	Two 9 mos.	9 mos.	Lived	Both lived	Stabbed retain'd shrunk en
11	Bovee, J. W.	1889	1898	30	II	9 mos.	9 mos.	Lived	Lived	Died Partly ex- pelled removed
12	McClintock, J. C.	1894	1895	30	I	3 mos.	7 mos.	Lived	Abor- ted, crim- inal	Died Removed later
13	Lotheissen, Geo.	?	1895	?	?	?	2 mos.	?	Abort'd twice	Died Removed
14	Mann, M. D.	1884	1895	33	Nulli	Three 9 mos.	9 mos.	Lived	Three lived	Died Retained 13 years removed
15	Mondy, S. L. C.	1902	1903	27	IX	6 wks.	? wks.	Lived	Abort'd	Died
16	Geyl	1898	1903	35	I	3 wks.	4½ mos.	Died	Not vi- able; re- abort'd	Not vi- able; re- moved

Site of Extra-uterine Ovum	Classification and Evidence	Bibliography	Remarks
?	I Hist. abdom. preg. fol'd by uterine	1	
?	I Hist. shows ectopic died 22 mos. before ut. began	2	
Right tube and ovary	I Ut. began 1-2 mos. after ectopic died (C-N).	3	Ectopic fetus discharged through anus 2 months before delivery of intra-uterine child (Zinke).
Right side cul-de-sac	I	86	History would indicate both fetuses probably lived at same time, though title explicitly states uterine followed ectopic fecundation.
"Left ovarian"	I Ectopic began 1873. Ut. began 1875	52	translations, one original article in Gazette Obstet. the other correspondence Jour. de Méd. et de Chir. art. 10408, first cred. to Dibat, second to Ribot. Facts so similar that it is probably same case.
Left pelvis	I Ectopic died June 1872. Ut. began February, 1873.	6	Patient later died, diagnosis tuberculosis. Occasional discharge pus and bones from vagina.
Cul-de-sac to right and behind uterus	I Statement by author	7	Translation. No other data available.
Ec- High in abdomen mor	I (Also IIc) Premature delivery and autopsy	8	This case also appears in table IIc.
d Left tube	I Abortive and operative findings	9	Ectopic fetus removed by abdominal section.
af- Left tube	I (Also IIc) Shape, movements, heart sounds	10	Attempt to kill ectopic by aspirating amniotic fluid. Its death made certain by thrusting trochar into fetal chest.
Left abdomen	I Fetal movements and false labor in 1889. Delivery at term in 1895. Ectopic removed later	11	Infection of gestation sac. Expulsion of bones per rectum. Two weeks later fetus removed by abdom. section. Sac remained. Fecal fistula.
Right side	I Dead 7 mos.; ectopic fetus removed immediately after 3 mos. uterine abortion	12	Abdominal section.
Mis- Middle of right tube	I One month after uterine abortion macerated 2 mos. ectopic removed	13	Abdominal section. Considered coincident by Christer-Nilsson.
?	I False labor 1884, after apparently normal pregnancy. Three children born later	14	Intestinal complications requiring two resections at time of removal of ectopic products by abdominal section.
in- Left tubo-ovarian; "sac lying between tube and ovary"	I (Also IIc) Abortive and operative findings plus dates	15	In 6 months 4 times pregnant in uterus and once in tube. Third uterine and tubal probably coincident. While carrying ectopic products 4th uterine pregnancy lasted 6 weeks. Pregnant twice subsequently making 10 uterine pregs. and one tubal in 2 years.
ver- ?	I Old dead 4½ mos. ectopic fetus removed by abdominal section; then 3 weeks ovum expelled from uterus	87	

No.	Reported by	Year Occurred	Year Pub.	Age of Mother	Para	Duration of Pregnancy		Result to—			Diagnosis of Compound Pregnancy Was Made
						Intra-uterine	Extra-uterine	Mother	Intra-uterine Fetus	Extra-uterine fetus	
20	Duverney	1708	?	21	0	3 mos.	3 mos.	Died			At autopsy
21	Lachapelle, M.	1811	?	?	?	6 mos.	3 mos.	Died	Died	Died	After delivery of uterine fetus
22	Geoffrey, Niessen	?	1722	?	?	Two 9 mos.	?	Lived	Two lived	Died Retained	At autopsy, 10 yrs after delivery
23	Gaessman, N.	1820	1820	23	I	9 mos.	9 mos.	Died	?	Died	After delivery of uterine
24	Stark, J. P.	?	1822	?	?	9 mos.	9 mos.				At confinement first seen
25	Trezvant, D. H.	1825	1825	?	?	5-6 mos.	One, 6 weeks One, 6 mos.	Died	Died	Died	At autopsy
26	Whinnery, E. D.	1845	1846	26	III	9 mos.	9 mos.	Died	?	Died	After delivery of uterine pregnancy
27	Ambrasioni, Gaetano	1846	1846	28	II	9 mos.	9 mos.	Lived	?	Died	At confinement
28	Gordon, F. H.	1847	1848	?	?	6 mos.	6 mos.	Died	Not viable	Not viable	Diagnosis made before abortion
29	Weber, C. A.	?	1848	28	I	9 mos.	4 mos.	Lived	Lived	Died	After delivery
30	Craghead, Wm. G.	1849	1850	35	II	3 mos.	3 mos.	Died	Not viable	Not viable	At autopsy
31	Packard	1849	1859	35	?	3 mos.	3 mos.	Died	Abort'd	Not viable	At autopsy
32	Rosshirt, J. E.	1849	1851	?	?	9 mos.	?	?	?	?	?
33	Buck, W. D.		1855	25	?	3 mos.	3 mos.	Died	Not viable	Not viable	At autopsy
34	Clark (e), J	1856	1856	40	II	9 mos.	9 mos.	Lived	Lived	Died Retained	During labor
35	Taffnell	1860	1862	?	I	3 mos.	2 mos.	Died	Not viable	Not viable	At autopsy
36	Pellischek, F. T.	1861	1865	38	Multipara	9 mos.	9 mos.	Lived	Lived	Died Retained Encysted 1 year	After delivery of uterine
37	Cook (e), L. R	1862	1864	39	III	9 mos.	9 mos.	Died	Died	Died	Before delivery of uterine child
38	Pennyfather, J. P.	1862	1863	38	V	9 mos.	9 mos.	Lived	Still birth	Died Retained Encysted 8 1/2 mos.	After delivery of uterine child
39	Mascagni, Paulo	1862	1874	37	XIX	3 mos.	9 mos.	Lived	Abort'd	Died Retained	After abortion
40	Sager, A.	1870	1870	?	?	3 mos.	3 mos.	Died	Not viable	Not viable	At autopsy

	Site of Extra-uterine Ovum	Classification and Evidence	Bibliography	Remarks
	Right tube	IIC Autopsy findings	16	Maternal death from ruptured ectopic sac and internal hemorrhage.
ed	?	IIC Delivery 6 mos. fetus 3 mos. after death of 3 mos. ectopic	17	
	Right tube	IIC Statement of author	18	By reason of conflicting statements accuracy of conclusions questioned.
	Left tube and ovary	IIC		
	?	IIC Statement both fetuses living at confinement	19	Translation from Italian. Further data lacking.
	One not given; other in small ovum attached to outer surface large sac	IIC Intra ext. uterine fetuses of same age living; death of mother	20	Death due to rupture ectopic sac and internal hemorrhage.
	?	IIC	17	Ectopic attained 2 years. Pieces discharged through ulcerated abdominal wall.
ent.	?	IIC Fetal movements felt from 5th till 10th month. Ballottement after uterine delivery	21	Recovered after a tedious puerperium.
	?	IIC Abortive and operative findings	17	Ectopic fetus retained many years. Patient had 5 children. Ectopic fetus removed through posterior cul-de-sac.
cor sion	?	IIC	22	Fetus (ectopic) expelled from abscess 6 months after delivery.
two	Left tube	IIC Aborted 3 mos. fetus; 3 days later fresh 3 mos. ectopic found at autopsy	23	Rupture ectopic one day; abortion next; death, hemorrhage, 2 days later.
	Left tube	IIC Three months abortion; 3 mos. ectopic fetus at autopsy 2 days later	24	Abortion and tubal rupture practically coincident. Death from internal hemorrhage.
	?	IIC "Both children were delivered to perfection"	25	"The first was expelled by contractions of the uterus but the second he took out of the abdomen by colpotomy."
	Right tube	IIC Autopsy findings	17	Death from rupture of ectopic and internal hemorrhage. Also described by Tebbetts.
	Left tube and ovary	IIC Zinke's table	17	
	Right tube	IIC Autopsy	17	Both ova said to have come from right ovary.
	Left ovary and tube	IIC Zinke's table	17	
	Left side	IIC Zinke's table	17	Death due to peritonitis.
	Left tube	IIC Zinke's table	17	Ectopic fetus discharged by ulceration through vagina.
	?	IIC	26	Fetus retained. Patient in good health 12 years after.
	Left tube	IIC Autopsy findings	17	Death from rupture of ectopic sac and internal hemorrhage. Both ova said to have come from same ovary.

No.	Reported by	Year Occurred	Year Pub.	Age of Mother	Para	Duration of Pregnancy		Result to—			Diagnosis of Coincident Pregnancy was Made
						Intra-uterine	Extra-uterine	Mother	Intra-uterine Fetus	Extra-uterine Fetus	
41	Sinks, T.	1870	1873	23	Multipara	6 mos.	4½ mos.	Died	Died	Not viable	Antemortem
42	Satterthwait, S. T.	1870	1872	35	III	9 mos.	9 mos.	Lived	Still birth	Died	Ectopic not recognized until ectopic sac discharged from vagina; rectum some months after still birth
43	Sale and Moore	1870	1871	22	0	9 mos.	9 mos.	Died	Lived	Lived	Before labor
44	Beach, J. H.	1870	1871	28	I	6 wks.	9 mos.	Lived	Abort'd	Died Retained	Before abdominal section
45	Laudon, Henry B.	1870	1871	?	?	About 11 wks.	About 11 wks.	Died	Not viable	Not viable	At autopsy
46	Pollak, S.	1871	1871	25	II	9 mos.	9 mos.	Died	Lived	Died	At autopsy
47	McGee, J. J.	1872	1875	28	?	4 mos.	4 mos.	Lived	Abort'd	Not viable; discharged per rectum	Before abortion
48	Starley, S. F.	1872	1873	?	?	9 mos.	9 mos.	Died	Lived	Undelivered	After delivery of intra-uterine child
49	Hodgon, J. J.	1873	1874	27	?	9 mos.	5 mos.	Lived	Lived	Died Became Encysted	After delivery of intra-uterine child
50	Chabert	1874	1876	25	?	9 mos.	9 mos.	Lived	Lived	Died Retained for a time	Upon extrusion of ectopic extremity through umbilicus
51	DeRosset, J.	1876	1878	27	I	9 mos.	5 mos.	Lived	Probably lived	Died Later discharged	At discharge of intra-uterine fetus
52	Dumollard, J.	1878	?	?	?	9 mos.	9 mos.	Lived	?	Died Retained	?
53	Brühe, L.	1879	1887	39	VI	8 mos.	6 mos.	Died	Died	Died	At abdominal section
54	Galabin	1880	1881	37	I	6½ mos.	6½ mos.	Died	Died	Died	At abdominal section
55	Wilson, H. P. C.	1880	1880	24	III	8 mos.	9 mos.	Died	Lived	Lived	At delivery
56	Piersons, A. M.	1881	1881	33	IV	2 mos.	2½ mos.	Died	Not viable	Not viable	At autopsy
57	v. Rossthorn, A.	1889	1890	36	XII	7 mos.	9 mos.	Lived	Died	Died	After delivery of intra-uterine fetus
58	Harriman, A. H.	1889	1890	32	0	9 mos.	9 mos.	Lived	Lived	Died Retained	After delivery of intra-uterine child
59	Ahlfeld, F.	1886	1886	34	I	7 mos.	5 mos.	Lived	Lived	Died	At 4½ months

	Seat of Extra-uterine Ovum	Classification and Evidence	Bibliography	Remarks
ked ged	?	IIC	17	Ectopic fetus ulcerated through vagina causing abortion intra-uterine fetus. Death from sepsis.
ntil	?	IIC Discharged 9 mos. ectopic some months after still birth at term	27	Infection of ectopic sac evidently followed tedious delivery and "child-bed fever," which promptly developed.
	Left tube	IIC Both children delivered alive	28	Ectopic delivered by abdominal section. Both children lived. Mother died. Septicemia.
	Left tube	IIC	17	Ectopic fetus delivered by abdominal section 4 years after abortion of intra-uterine ovum.
	Left tube	IIC Autopsy findings	17	Death from rupture ectopic sac and internal hemorrhage. Both ova said to have come from right ovary.
tro- rus ntil		IIC Autopsy findings	17	
		IIC Ectopic fetus discharged through the rectum after traumatism. Aborted fetus of same age	29	Discharge of ectopic occurred a few days after attempts at reposition.
fter	?	IIC	17	Patient refused operation.
		IIC	17	Not included in Christer-Nilsson's list, although mentioned in bibliography.
nis-	?	IIC	30	Five months after delivery and some time after discharge of some fetal parts the remainder of ectopic fetus removed by abdominal section.
ore osi-	?	IIC Decomposed 5 mos. fetus expelled from cervix 2½ mos. after delivery at term	31	Although this case is included by Zinke and Christer-Nilsson, history shows it to be somewhat doubtful.
	?	IIC Statement of Christer-Nilsson		
	Left tube	IIC Clinical history and operative findings	17	Still birth. Macerated ectopic. Death following operation. Hemorrhage.
nis- ova- on-	Right tube	IIC Recent 6 mos. ectopic removed by operation; 6 mos. abortion 3 days later	32	Placenta left attached to uterus. Uncontrollable hemorrhage from it, and death followed contractions of uterus due to premature delivery.
at	Right tube	IIC One living child delivered at 8 mos.; other living child removed by section	33	Mother died of sepsis. Case also reported by G. H. Boylan.
be-	Right ovarian (?)	IIC Abortion 2 months; products examined; autopsy showed ectopic fetus of 2½ months	34	
	Left tube	IIC Ectopic fetus delivered by abdominal section plus delivery uterine fetus	17	
	?	IIC Zinke's table and Christer-Nilsson	17	
	Right pelvis	IIC Ectopic body made out and heart sounds counted; uterine child delivered soon after	35	Ectopic fetus retained.

No.	Reported by	Year Occurred	Year Pub.	Age of Mother	Para	Duration of Pregnancy		Result to—		
						Intra-uterine	Extra-uterine	Mother	Intra-uterine Fetus	Extra-uterine Fetus
60	Edis, A. W.	? 1898	?			9 mos	9 mos.	Died		Died
61	Martin, E. W.	1890 1892	40	IV		5 mos.	7½ mos.	Died	Craniotomy Abort'd	Died
62	Worral, R.	1890 ?	30	V		9 mos.	9 mos.	Lived	Lived	Died
63	Herzfeld, A.	1891 1891	33	II		9 mos.	9 mos.	Lived	Lived	Died
64	Dickson, J. A.	1892 1894	28	IV		2 mos.	2½ mos.	Lived	Abort'd	Died
65	Kallmorgen	1893 1893	35	VI		6 mos.	6 mos.	Died	Died	Died
66	Franklin, G. C.	1893 1894	33	V		9 mos.	9 mos.	Died	Lived	Died
67	Mathewson, H. P.	1894 1898	30	Multipara		9 mos.	9 mos.	Lived	Lived	Stabbed Died Retained
68	Mitchell, T. E.	1894 1896	30	Multipara		5½ mos.	5½ mos.	Died	Abort'd	Not viable
69	Pestaloza, E.	1894 1895	35	0		5 6 wks.	5-6 wks.	Lived	?	?
70	Walther, H.	1895 1895	35	III		3 mos.	3 mos.	Lived	?	?
71	Hirst, B. C.	1894 1894	?	?		4 mos.	6-8 wks.	Lived	Abort'd	Not viable Removed
72	Moseley, W. E.	1895 1896	?	I		3½ mos.	3½ mos.	Died	Not viable	Not viable
73	Ludwig	1896 1896	35	V		9 mos.	9 mos.	Lived	Lived	Lived
74	Ligetti, J.	1896 ?	33	V		10 wks.	10 wks.	Lived	Not viable	Not viable
75	Cragin, E. B.	? 1893	23	I		6 wks.	6 wks.	Lived	Not viable	Not viable
76	Müller, E.	1897 ?	29	?		4½ mos.	4½ mos.	Lived	Abort'd	Not viable
77	Jones, H. E.	1897 1898	42	Multipara		3 mos.	4 mos.	Died	Abort'd	Not viable
78	Desquin, Leon	1897 ?	?	?		2 mos.	2 mos.	Lived	Abort'd	Not viable
79	Desquin, Leon	1897 ?	?	?		3 mos.	3½ mos.	Lived	Abort'd	?

	Seat of Extra-uterine Ovum	Classification and Evidence	Bibliography	Remarks
	?	IIc Statement both living at term	36	Case related by Edis while reporting his own.
ntil	?	IIc Uterine abortion at 5 mos.; distinct fetal movements thereafter; 7 mos. fetus found at autopsy	37	After abortion ectopic thought to be intro-uterine. Later correct diagnosis with dissenting opinions.
	?	IIc Zinke's table	17	Ectopic fetus delivered by abdominal section.
Right side		IIc Both fetuses alive at term	38	Ectopic fetus delivered by abdominal section.
Left tube		IIc Aborted at 2 mos.; tubal rupture 2 weeks later, in 2 more weeks tube and secundines removed by abdominal section	39	
Left tube		IIc Death from tubal rupture and hemorrhage; ectopic and uterine fetuses of same age	40	
In pelvis back of and below uterus		IIc Two full term fetuses, one ectopic, other uterine delivered by abdominal section; ectopic placenta still living	41	Hemorrhage from placenta likely began before operation. Proved fatal half hour after operation.
Left tube		IIc Living child delivered at term; another living child remained in abdomen	42	Patient subsequently had 2 children and consequently appears in class I as well.
Left tube		IIc Abortion and autopsy; both recent fetuses same age	42	Death of mother due to internal hemorrhage caused by separation of placenta from tugging of contracting uterus.
?		IIc Operative findings	17	Abdominal section and hysterectomy.
Left tube		IIc At operation left ruptured preg. tube and preg. right horn of uterus found	43	
Right tube		IIc Positive ectopic structures and abortive fetus	44	Self-induced abortion coupled with ectopic; abortion masked ectopic
Right tube		IIc Ectopic rupture; fetus removed by operation; at autopsy like fetus found in uterus	45	Death due to hemorrhage from rupture and shock of abdominal section
Left side		IIc Living ectopic fetus delivered by abdominal section; uterine born alive	17	Fifth day after birth mother sent to hospital and living ectopic delivered by abdominal section.
Right utero-tubal		IIc	17	
Tube		IIc	17	
Right tube		IIc Four and one-half mos. fetus aborted; one of same age removed by section	17	
Left tube		IIc Four mos. ectopic removed at section; uterine placenta said to have been found	46	"Evidently the fetus had been discharged with hemorrhage and clots, as we found nothing but a well-formed placenta of 2½ or 3 mos. development." May not this have been decidua? Ectopic removed by abdominal section; death from hemorrhage and shock.
Right tube		IIc Abortive and operative findings	17	Ectopic ovum removed by abdominal section.
Right side		IIc Abortive and operative (? findings)	17	Ectopic removed by abdominal section.

No.	Reported by	Year Occurred	Year Pub.	Age of Mother	Para	Duration of Pregnancy		Result to—			Diagnosis of (found Pregnant was Ma.)
						Intra-uterine	Extra-uterine	Mother	Intra-uterine Fetus	Extra-uterine Fetus	
80	Mond, Richard	1897	1898	28	V	9 mos.	6 wks.	Lived	Lived	Not viable	At operation
81	Boyd, Mrs.	1897	1901	29	II	9 mos.	2 mos.	Lived	Lived	Not viable	Before operation
82	Royster, H. A.	1897	1897	34	II	9 mos.	9 mos.	Lived	Lived	Died Remov'd	After delivery of child
83	Kiriak	?	1898	?	?	?	?	Lived	Not viable	Died	?
84	Hermes	1898	1900	30	III	9 mos.	2 mos.	Lived	Lived	Not viable	2 months after operation
85	Miller, C. Jeff.	1898	1898	27	I	3½ mos.	3½ mos.	Died	Died	Died	At autopsy
86	Halley	?	1899	29	?	7 wks.	7 wks.	Died	Died	Died	At operation
87	Doktor	1898	1899	26	I	3 mos.	7 mos.	?	Died	Died	At abortion
88	Thomson, N.	1899	1899	36	III	2 mos.	2 mos.	Lived	Abort'd	Not viable	After abortion
89	Dittel	1899	?	40	Multipara	3 mos.	3 mos.	Lived	Abort'd	Not viable	At operation
90	Strauss, W.	1899	1900	34	II	14 wks.	12 wks.	Died	Not viable	Not viable	Before operation
91	Zinke, Gustav	1899	1902	23	0	9 mos.	3 mos.	Lived	Lived	Not viable	At operation
92	Peck, G. S.	1900	1902	27	0	9 mos.	2½ mos.	Lived	Lived	Not viable	Suspected at operation
93	Belaustequi, E. F.	1900	1900	33	II	3-4 mos.	3-4 mos.	?	Not viable	Not viable	At operation
94	Cantwell, F. V.	1901	1901	27	II	6 wks.	3 mos.	Lived	Abort'd	Not viable	At uterine ab after operation
95	Warneke, S. W.	1901	?	34	IV	9 mos.	6 mos.	Lived	Lived	Died	At operation
96	Engström, Otto	1898	1901	29	III	3 mos.	2 mos.	Lived	Not viable	Not viable	Suspected by made at operation
97	Wetherill, H. G.	1901	1901	?	?	?	9 mos.?	Lived	Abort'd	Died	At operation
98	Frederick, C. C.	1898	1901	?	?	9 mos.	?	Lived	Lived	Died	At operation
99	Elliott, J. W.	1901	1902	35	II	2½-3 mos.	Very Early 2 mos.?	Lived	Abort'd	Died	At operation. Suspected before
100	Perkins, H. P.	1901	1902	26	I	2 mos.	6 wks.?	Rec'd	Abort'd	Died	At operation

Seat of Extra-uterine Ovum	Classification and Evidence	Bibliography	Remarks
Right tube	IIc Date of rupture and nature of products	47	Ectopic products removed at third month of uterine pregnancy.
Right tube	IIc Two months ectopic removed by section; 7 mos. later child born at term	48	
Left tube	IIc Uterine child born alive; fetal heart sounds and movements detected there-after	49	Nine mos. fetus delivered dead by abdominal section; placenta removed.
?	IIc One fetus aborted, other removed by cul-de-sac	50	Abstract only available.
Left tube	IIc Two months ectopic removed after rupture; 9 mos. child born	51	
Left tube	IIc Ectopic and uterine fetuses same age at time of abortion and tubal rupture; autopsy	52	Mother died from rupture and internal hemorrhage following intra-uterine manipulation a few hours after abortion.
Isthmus of right tube	IIc Seven weeks' products found in uterus and abdomen at time of rupture and operation	53	Only proceedings of medical society; specimen presented and clearly described; mother died from rupture, hemorrhage and immediate operation.
Left tube	IIc Three mos. aborted fetus at 3 mos. ectopic	54	Ectopic fetus removed by abdominal section at end of 9 mos.
?	IIc Abortion at 2 mos. Ectopic embryo removed through cul-de-sac	55	
Right tube	IIc Ectopic fetus (fresh) removed by section soon after abortion	57	
Right tube	IIc Ectopic found at operation; proved by microscope	56	
Right side	IIc Three mos. ruptured ectopic removed during uterine pregnancy	57	Ectopic removed by abdominal section; uterine weighed 9 pounds.
Right tube	IIc Two and one-half mos. fresh ectopic removed during uterine pregnancy	57	Uterine fetus delivered at term.
Tube	IIc Three mos. abortion and tubal rupture; 3 mos. ectopic found at operation	58	
Left tube	IIc Rupture; ectopic removed; uterine abortion soon after	59	
Left tube	IIc Ectopic rupture and removal at operation of 6 mos. fetus during uterine gestation	60	
Right tube	IIc Ruptured tube with mole removed; aborted 1 mo. later	61	Abortion resulted from fall 1 mo. after operation, hence no connection with latter.
Right pelvis	IIc ?	62	Only society proceedings available; report somewhat confusing.
?	IIc ?	63	
Ruptured left tube	IIc Operative and abortive findings	64	Uterine fetus found; ectopic fetus not found, but competent microscopic diagnosis made.
Ruptured right tube	IIc Operative and abortive findings	65	Ectopic products removed by operation one week after rupture; threatened abortion instrumentally completed.

No.	Reported by	Year Occurred	Year Pub.	Age of Mother	Duration of Pregnancy		Result to—			Diagnosis of Condition of Pregnancy was Made	
					Intra-uterine	Extra-uterine	Mother	Intra-uterine Fetus	Extra-uterine Fetus		
101	Kochanon	1901	1902	31	V	4 mos.	2 mos.	Rec'd	Abort'd	Died	Before operation
102	Phillips, Jno.	1901	1902	28	II	8 wks.	Very early	Rec'd	Abort'd	Died	After abortion, per operation
103	Vasten	19—	1902	?	?	9 mos.	?	Rec'd	Lived	Died	?
104	Vasten	?	1902	?	?	?	?	?	Abort'd	Died	?
105	Reifferscheid	1902	1903	26	II	9 mos.	3 mos.	Rec'd	Lived	Died	At operation
106	Hagens and Moorehead	1902	1903	33	V	3½ mos.	3½ mos.	Lived	Abort'd	Died	Suspected prior removal of ectopic colpotomy; ended by abortion hours later
107	Morrison, J. B.	1900	1903	?	?	3 mos.	2 mos.	Lived	Abort'd	Died	At abortion one month after ectopic was removed by colpotomy not previously expected
108	Morrison, J. B.	1902	1903	33	V	2 mos.	3 mos.	Lived	Abort'd	Aborted	At second abortion
109	Biehat	?	?	?	?	?	?	?	?	?	?
110	Mondy, S. L. C.	1902	1903	27	IX	6 wks.	7 wks.	Lived	Abort'd	Died	From specimen at abdominal section
111	Moulouguet	1901	1902	28	II	9 mos.	4½ mos.	Lived	Lived	Died Remov'd	9 days after operation
112	Simpson, F. F.	1903	1903	24	0	9 mos.	2 mos.	Lived	Lived	Not viable Remov'd	At operation
113	Morrison and Jessett	?	1903	27	I	2 mos.	2 mos.	Died	Not viable	Not viable	At operation

	Seat of Extra-uterine Ovum	Classification and Evidence	Bibliography	Remarks
over-	Tubal abortion, 2 mos.	IIc Operative and abortive findings	66	Ectopic products by oper- ation; uterine fetus abort- ed 23 days later.
oned	Tubal abortion	IIc Operative and abortive findings	67	Operation soon after rup- ture; clinical signs con- firmed by chorionic villi.
	?	?	68	Only abstract available; may have been previously reported; ectopic remov- ed by operation.
	?	?	68	Only abstract available; may have been previously reported; ectopic remov- ed by operation.
or to over- on	Left side	IIc Probably	69	
Ecto- sed	Ruptured right tube	IIc Operative and abortive findings	70	Ectopic removed by colpot- omy at secondary rupture.
Ec-	?	IIc Operative and abortive findings	71	
In- sus-	Right interstitial	IIc Abortive findings	71	Interpreted by author as twin pregnancy—one uterine, one interstitial. His description does not preclude the possibility of twin pregnancy in a uter- us septus anneales.
	? Left tubo-ovarian	?	72	Only abstract available; no details of case given ex- cept that it was twin preg- nancy combined intra- and extra-uterine.
r in- on		I and IIc Abortive and op- erative findings plus dates	75	In 6 mos. four times preg- nant in uterus and once in tube; third uterine and tubal probably coincident; while carrying ectopic products fourth intra- uterine pregnancy lasted 6 weeks; pregnant twice subsequently, making 10 uterine pregnancies and 1 tubal in 2 years.
	Left tube	IIc Ectopic fetus removed during course; normal pregnancy	75	
uter- then topic	Right ruptured tube	IIc History: rupture; ecto- pic at 2 mos.; products re- moved at 3d mo.; delivery at term 5 mos. later	76	Typical history of both con- ditions; combination not positive because consid- ered so rare; ectopic re- moved by abdominal sec- tion; uterine gestation not interrupted.
t op-	Left tube	IIc History of ectopic; rup- tured tube and pregnant uterus found at operation	—	Personal communication

Class II. (a) includes all the cases available to the writer in which the sequence of events clearly shows that the ectopic pregnancy began at least a month before the uterine pregnancy, and continued to develop for some time after the existence of its twin embryo began. Convincing evidence of such a condition has been found only three times.

Class II. (b) should include the cases in which it seems probable that uterine pregnancy was in existence before the extra-uterine ovum was fecundated. This class must necessarily remain small, and positive proof of its right to exist is, I think, lacking. It is not sufficient that an ectopic fetus should be smaller than its uterine twin, for it so often happens that such a fetus is dwarfed by limited nourishment. (Cragin and Galabin.) Christer-Nills-son studied them critically, and I think properly concludes that the two pregnancies began at the same time. I have found no others to take their place.

Class II. (c) includes those cases in which the clinical course indicates fecundation of the two ova at or very near the same time. I have found ninety-eight recorded cases of this kind.

Frequency.—The history of ectopic gestation shows that for very many years the reported cases were largely those that forced their own recognition by going to term, by a violent explosion or by expulsion of the fetus from a suppurating sac. With evolution of modern methods of finding, interpreting and treating gross pathological lesions, however, a transformation has been wrought here, as elsewhere. It should fast become the rule to recognize compound as well as simple cases of hemorrhage into the ovum, tubal abortion, early, slow and rapid rupture and unruptured ectopic pregnancy. In the past these cases were rarely reported, perhaps rarely recognized. But with growing skill we have an increasing literature of the general subject and of compound pregnancy as well. Thus a chronological study of accessible reports shows fifty-six authentic cases of compound pregnancy in all the decades prior to 1893, and fifty-six reports in the ten succeeding years. That this increase is due to more frequent recognition, rather than to a more complete record of recognized cases, is made clear by the fact that the proportion of conspicuous cases remains unchanged, while the less conspicuous ones have greatly increased.

Oversight thus seems to have been the most common cause of error. The error itself has usually consisted in recognizing the uterine pregnancy and mistaking the ectopic for inflammation con-

ent upon emptying the uterus, for a neoplasm (commonly an ovarian cyst), or in recognizing the ectopic and simply overlooking the uterine pregnancy until it has made itself known.

Another very common error has been to recognize the ectopic pregnancy and to consider the uterus with its growing decidua as normally pregnant uterus, or to mistake a discharged decidua for a cast-off ovum.

Because of the actual frequency and perilous course of this condition, it is therefore important that every case detected should have wide professional publicity. Especially is it incumbent upon the authors of text-books on obstetrics and teachers of that branch of medicine to give this subject proper recognition.

The cases recorded have been so typical of the two conditions as to illustrate that when the facts are all in we wonder how a mistake could occur. It should rarely do so when one has sufficient practice in pelvic examinations to recognize the *physical* conditions present; knows the course of ectopic, and the changes constantly causes; knows the positive signs of pregnancy; and especially *knows that the two conditions not infrequently co-exist.*

Treatment.—The treatment of compound pregnancy is in many particulars identical with that of simple ectopic. It accordingly varies with the duration of the ectopic and the degree of its integrity. Its claim for recognition (such as rupture, hemorrhage, livid fetus, visceral encroachment and complications, infection, etc.), together with the immediate and available surroundings and facilities, are factors to be determined. The patient's power to understand the treatment or the disease, however, demands the most careful consideration.

It differs from the treatment applicable to simple ectopic by virtue of the third life in question and the varying exigencies of its existence.

The products of ectopic gestation, living or dead, are a constant source of danger till removed by nature or the surgeon. Natural processes, absorption, hermetic sealing, infection and cast-off are often adequate. Especially is this true when the tenacious ovum is thrown into the abdominal cavity with relatively little laceration as in tubal abortion and early rupture. This form of complete cure occurs in comparatively few instances. Even during this gradual course opportunity is afforded for further rupture and infection. Infection is usually due, of course, to adherent intestines. The way for rupture is prepared by continued growth, added tension and penetration of the sac. The actual oc-

currence of rupture is frequently determined by increased abdominal pressure from trivial exertion, or external violence. In compound pregnancy these forces are all made more active by the dragging and pressure of the growing uterus and by the tugging which results from emptying it prematurely, or at term. Obstructions to the birth canal and added avenues for infection further increase the mortality of this condition.

We therefore have greater reason for appropriate and timely surgical intervention in compound than in simple ectopic pregnancy. The vital questions are what is appropriate treatment, and when is it timely?

When taken in connection with the natural and operative history of ectopic gestation, the course and results observed in 112 collective cases of compound pregnancy afford a fair basis for the following conclusions:

In compound, as in simple cases, the ectopic is a source of grave danger. The ectopic fetus has rarely been delivered alive, and the ectopic child has more rarely reached maturity. In the conflict for life it should therefore be disregarded unless it is almost viable and the surroundings make delay safe. The greatest safety to the mother and her offspring lies in removing the ectopic products by abdominal section, preferably before any complications have occurred.¹

As to the time at which operation should be done, in cases of rupture and hemorrhage, my views honestly, but rather widely, differ from those repeatedly expressed by quite a number of operators of wide experience and excellent results. My opinions are based upon observations on more than seventy cases, and I have tried to study them critically. Of that number, only three have been operated upon within a few hours of hemorrhage. Two recovered, one died. She would certainly have died without operation. I have seen but one die from hemorrhage. Though such an experience must be exceptional, in the main, it must accord with the observations of those who see the undisturbed cause of rupture.

I fully subscribe to the fact that some patients will die with or without operation. In some, but few, immediate operation is clearly imperative; in all, we should be *prepared* to operate on short notice. I cannot agree, however, with those who assert that

¹In 21 cases thus operated upon 19 mothers and eleven uterine children lived. This record contrasts strikingly with results following other plans of treatment.

t immediate operation, quite the majority of these women

On the contrary, I believe that many of those who recover immediate operation, do so in spite of a hazardous procedure hastily done under circumstances that could hardly be less favorable.

In preference, it has been my custom to defer operation until the patient has recovered from acute anemia. Very few examinations and absolute muscular and mental rest, in some cases made certain by morphine have been insisted upon as affording the best means of preventing continued or recurrent bleeding.

Report of Case.—M. S., twenty-four years old, nulliparous; menstruation always regular. Her last period occurred December 1902; the January period was passed. After slight nausea a few days, she had (February 19, 1903) sudden severe pain in the region of her right tube, which necessitated rest in bed. On February 21st., Dr. Hays saw her and recognized the condition at that visit. He promptly referred the patient to me. She was very anemic, had a pulse of 120, and temperature of 103°. There was a tender mass the size of a small cocoanut in her right tube and her uterus was slightly enlarged. She was immediately admitted to the hospital and kept at absolute rest. In four weeks her temperature and pulse had about reached normal and her strength was about rebuilt. Examination showed what felt like the head of a fetus in the uterus well to her left and an elastic globular mass four or five inches in diameter behind and to the right of it. The uterus was regularly contracted. At examination under ether, the left side of the uterus had relaxed. The purple cervix, soft lower uterine segment and globular elastic fundus gave unmistakable evidence of a three months' uterine gestation. The mass found in the tube thirty days before had been pushed up and to the right of the uterus.

After diagnosis of early ruptured tubal pregnancy had been made, now it was equally clear that the uterus contained an early fetus. Notwithstanding the fact that the two pregnancies were typical, and each in turn recognized, I am free to admit that this combination was considered so unusual as to be improbable at least. April 9th, after three weeks of normal temperature the abdomen was opened to the left of the median line. When the peritoneum was cut through, a little free blood welled out. The omentum was separated from vesical and uterine attachments and the uterus, very nearly four months pregnant, was found rather to the left of the median line. Behind and to the

right of it, extending a little above and dipping deep into the pelvis, was a sac containing more than a pint of clotted blood. This sac was of recent origin and was adherent almost throughout its entire surface to intestines, pelvic walls and uterus. It was shelled out from its attachments, delivered, and removed. Oozing was controlled. The abdomen was closed and convalescence was normal. The uterine pregnancy gave no other evidence of its presence than continued growth. Before the patient left the hospital, fetal movements and heart sounds were distinct. She returned to her home in Virginia, and through the kindness of Dr. B. F. Weaver, I have learned that she was confined September 12, 1903. Mother and child are doing well.

Pathology.—The specimen removed consisted of the outer three inches of the right Fallopian tube, the right ovary, a tubal mole, an adventitious sac, and about a pint of clotted blood.

The tube consisted of a proximal portion, which was $\frac{1}{2}$ inch long and appeared to be quite normal. A dilated portion which expanded from that just described, looking much like a sausage, one inch in diameter and two inches long.

The cavity was filled with what appeared to be old blood clots. At about the center of its upper surface was a ragged rupture $\frac{3}{4}$ inch in diameter. Protruding from it into the surrounding mass of blood clot was a tubal mole about $2\frac{1}{2}$ inches in diameter, in the center of which was a small cavity lined by a delicate whitish membrane.

Distal to the dilated portion of the tube it was contracted for half an inch, and then the fimbriæ were clearly seen.

The cystic ovary protruded into the sac of blood clot, thus showing conclusively that rupture occurred into the free abdominal cavity, and not into the broad ligament.

524 PENN AVENUE.

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cases, those of Horn, Chorbak, Kelsey and Wells, quoted by Christer-Nilsson as belonging to Class II, are not included because of lack of data, original publication not being available.

Schenk (83) refers to four cases of compound pregnancy but they are not included for lack of data.

Christer-Nilsson (34) also refers to a case which is probably the one fully described by Christer-Nilsson (61).

There yet remain a number of cases reported as compound pregnancy in which the available recorded facts do not constitute sufficient proof. Such cases are those of Detwiler (77), clearly ectopic, Maxson (78), Behm (79), Cox and Coles (80), Christer-Nilsson (81), Whitcomb (82) and Petrienti (86).

Christer-Nilsson (85) reports a case of compound pregnancy occurring in a sow, the title and place of publication giving no indication that it was in a lower animal.

Christer-Nilsson (81).—Occurred 1813, published 1818, age of mother not given, duration intra-uterine $3\frac{1}{2}$ months, extra-uterine 6 months, first observed and hence diagnosis made on dissection, ectopic fetus and fluid blood from ruptured right horn, uterus still pregnant with $3\frac{1}{2}$ months' fetus. As mother died from ectopic rupture and hemorrhage, the fetus was of six months' development, it is clear that while both were at same time, ectopic began first. (73.)

Edis, A. W.—Occurred 1889, published 1889, age of mother not given, intra-uterine fetus four months, extra-uterine five months, mother lived, living ectopic removed because of constriction of bowels, report made while intra-uterine still living with little danger of interruption, diagnosis made before operation, fetus in left cul-de-sac. As ectopic was of five months' development, while uterus observed at operation was of four months' development, the ectopic would seem to have antedated conception. (36.)

Argles, F.—Occurred 1870, published 1871, age of mother not given, intra-uterine aborted at two months, extra-uterine seven months, mother died three months after death of fetus, abortion and death of ectopic coincident; diagnosis of abortion uterine pregnant overlooked until abortion, ectopic having been detected three months earlier, although mistaken for normal pregnancy; side, right tubo-ovarian; evidence, ectopic to be alive a few days before abortion at two months. (74.)

ECTOPIC PREGNANCY.

BY

HENRY DOWNER INGRAHAM, M.D.,

Buffalo, N. Y.

It is not so much my intention to present new facts in regard to the etiology or pathology of this somewhat frequent and very interesting condition, as to give a brief history of a few of my cases not previously reported, and to present the conclusions derived from their consideration.

CASE I.—Mrs. M., American, age 30 years; menstruated first at 14; periods regular and normal; married ten years; two children, one 8, the other 5 years old; no miscarriages. Had missed two periods. Patient thought she was pregnant. Nothing unusual occurred until one day while reaching to adjust a window shade she was taken with severe lancinating pain in her left side. She was faint and dizzy and nearly fell to the floor, but managed to sit down. A few minutes later she was assisted to her bed. I was called to see her, and upon investigation pronounced the case one of ruptured ectopic pregnancy. She was removed to the hospital, and the following day underwent operation. Considerable clotted blood, debris, the left tube and ovary were removed. The patient made an uneventful recovery. A careful examination showed an engorged, thickened and enlarged tube, with an isthmus which was apparently smaller than normal. This was only apparent, not real, due to the enlargement of the rest of the tube. About the middle third of the ampulla, where the rupture occurred, the wall of the tube was thinner; the embryo in its sac had escaped from the tube and was found in the blood clots. There was no sign of previous disease of the tube; ovary healthy, containing corpus luteum of pregnancy.

CASE II.—Miss A., American; age 23. A strong, healthy, well-developed young woman. Menstruated first at 12 years, always regular and normal in every respect. Had missed her last three periods. If she had experienced any unusual symptoms during this time she would not admit it. One morning about two o'clock she was awakened by severe lancinating pain in her left side, accompanied by faintness, nausea and vomiting. There was also a slight

, shreddy, vaginal discharge. A physician was called who at the patient was having a miscarriage. The next day she more comfortable, and continued to be so for a week, but did not improve in any other respect. The bloody discharge continuing, the doctor thought she needed curetting, which he did under an anesthetic. Little debris was found, much less than the expected. From this time on, the patient grew gradually better. When I first saw her, nine days after the curetting, she had a temperature of 104°; pulse 120; anxious expression; abdomen very tender and sensitive; evidently suffering from sepsis. Physical examination revealed a large boggy mass at the left, posterior to the uterus. I considered it a case of ruptured ectopic pregnancy. The patient was removed to the hospital and operated upon. A large amount of clotted and decomposing blood, the left tube and ovary were removed. The fetus, apparently three months, was found just below the stomach. The left tube, which was slightly enlarged, and the right tube and ovary were apparently healthy. Patient made a good recovery. Examination showed a rupture of the tube at the outer end of the ampullary portion, which was very much thickened and engorged. At the site where the rupture occurred, it was thinner than normal. The right tube showed no sign of any previous disease. The ovary contained a corpus luteum of pregnancy.

CASE III.—Mrs. N., age 36; married when 23 years of age. Menstruated first at 14 years. Regular; periods normal after a few months; had never been pregnant, although anxious to have children. Suffered from vaginismus, for which she consulted me. A slight operation relieved this condition, and a little while after she missed her period, and thought herself pregnant. I did not see her again for some time, when I was hurriedly summoned, a messenger saying that while at work she was suddenly seized with sharp, cutting pains in her right side, and it was necessary to take her to bed. The pains continued in spite of the use of hot fomentations and applications. After examination I was satisfied that the cause of the illness was ruptured tubal pregnancy. Patient was taken to the hospital, and right tube, ovary and blood clots removed. An embryo was found enclosed in its sac in the blood clots, the rupture occurring in the middle of the ampullary portion of the tube. There was a sharp bend or kink in the tube at the middle of the isthmus, due either to defective development or old inflammation, although there was no sign of inflammation, nor loss of

epithelium present. Corpus luteum of pregnancy in ovary. Recovery of patient rapid.

CASE IV.—Mrs. L., age 29; married 8 years. One premature labor at 8 months two years previously. Had not been as well since. For a month past had experienced uneasiness and considerable pain in the right iliac region, which was increased when she attempted to do any work. For the past few days had been confined to her bed. Was frequently nauseated, but no faintness, nor pallor, nor fever; bowels constipated. Patient said that she had menstruated regularly and normally. I could not at any time get any history that indicated a ruptured ectopic pregnancy, nor in fact an ectopic pregnancy at any stage. A careful bimanual examination revealed a slightly fluctuating mass in the right side, about the size and shape of an ordinary lemon. I thought it was a pyosalpinx, and two days later operated at the hospital. Much to my surprise, I found a tubal pregnancy with rupture at the outer end of the ampullary portion of the right tube. Appearance indicated that the embryo which had escaped from the tube was five or six weeks old, although the patient said she menstruated normally one week before I saw her. Chorionic villi were found in the tube which had the appearance of a previous inflammation with loss of considerable epithelium throughout its whole extent. Corpus luteum of pregnancy in ovary. Recovery normal.

CASE V.—Mrs. G., age 30 years; married 8 years. Menstruated first at 14. Always regular and periods normal. One child three years old. Labor normal and had since been in good health. Had skipped two periods and thought herself pregnant. One afternoon was seized with severe cutting pains in the left iliac region, followed by faintness and a feeling of collapse. She was put to bed; her physician called, and in a short time was quite comfortable, although not able to be up. Two days later I was called and concurred in the opinion of her physician, that it was a case of ruptured tubal pregnancy. She was removed to the hospital and the following day operation confirmed the previous diagnosis. Examination showed that the tube was ruptured at the inner third of the ampullary portion. No embryo was found either in the tube or in the blood clots. Chorionic villi were in the tube which showed no sign of previous inflammation, no corpus luteum of pregnancy in ovary removed. Patient made an uneventful recovery.

CASE VI.—Mrs. B., American; age 29 years; married 6 years:

struated first at 15 years. Always regular. Sometimes experienced pain, not severe, otherwise periods normal; never had hemorrhage to any extent. Two children, oldest 3 years; youngest 18 months. Had been poorly for 3 months. Two weeks before I thought she had a miscarriage, and as a slight discharge continued, the uterus had been curetted. The discharge continued after the curetting, and the constitutional symptoms more pronounced. I was called and advised her removal to hospital, which was done. A large mass was discovered on the right side of the uterus, slightly tender. The patient gave no history that would indicate in any way that she had an ectopic pregnancy, either with or without rupture. She was, however, anxious to have the mass removed, whatever it might be. Operation showed that it was a case of tubal pregnancy. A few days after the operation the patient admitted that one night about two weeks previous she was very faint and could not get up the next morning; felt faint at times during that day. She had, in fact, been in bed ever since, although the faintness lasted only one night that day. She had previously denied any symptoms of like character, probably through ignorance in comprehending the questions. A careful examination of the specimen showed that the fetus was in the infundibular portion of the tube and that tubal abortion had occurred; that the tube was not ruptured at all. This was probably the reason that she did not experience greater shock. Doubtless the tube could have been saved if it had been more thoroughly explored. Owing to the patient's condition, I did not think it wise to prolong the operation, and this was the only unruptured tube I ever removed. It was covered at its outer end with closely adherent blood clots and chorionic villi difficult to remove. No other disease of the tube was discovered. Corpus luteum of ovary in ovary. Patient made a good recovery.

CASE VII.—Mrs. S., German; age 32 years; married 11 years; two children, oldest 9 years, youngest 2 years; no miscarriages; menstruated first at 13 years; regular and periods normal. Had missed two periods. One night, after a rather hard day's work, she suddenly awakened from a sound sleep with a severe pain in the left side; was faint and nauseated and vomited. The faintness and nausea continuing, the family physician was called, who thought it a case of ruptured tubal pregnancy, and advised her removal to the hospital. The next morning the doctor called and as I fully agreed with him, she was taken to the hospital that day and the next day was operated upon. The tube had

ruptured at the middle third of the ampullary portion, the rent being quite large. The embryo was found in the clotted blood. The chorionic villi were partially detached and remaining in the tube. Traces of an old inflammation of the tube were discovered. Corpus luteum of pregnancy in the removed ovary. Recovery uneventful.

CASE VIII.—Mrs. H, age 30 years; married 12 years; 4 children; oldest 10 years; youngest 3; menstruated first at 14 years, always regular after first year, and periods normal. Had passed two periods and supposed she was pregnant; had about the same symptoms as in her previous pregnancies. One afternoon, while at work, was seized with severe pains in right iliac region, was nauseated and faint, sat down in a chair as soon as possible, did not feel any better, and was assisted to bed and sent for her physician, who made a diagnosis of ruptured ectopic pregnancy. The next day I saw the patient and concurred with the family physician in his opinion of the case. The patient was removed to the hospital, and I operated on the following day. There was an unusually large amount of clotted blood in the abdominal cavity. The rupture, which was in about the middle of the ampullary portion of the tube, was small, the tube considerably thinned. The embryo was detached, but with the chorionic villi was retained in the tube. No previous existing disease in the tube. Corpus luteum of pregnancy in ovary; recovery uninterrupted.

CASE IX.—Mrs. G; age 23 years; menstruated first at 14; periods regular and normal; married six weeks. Had skipped one period before marriage and one since. Had always been in good health previous to this attack. Three weeks before I saw her, while eating breakfast was seized with severe, sharp lancinating pain in the left iliac region; was pale, faint and dizzy. She felt a desire to go to stool and was assisted to the closet by her mother, and had a slight movement of the bowels, but was not relieved of the desire to defecate. She had no further movement of the bowels until a few hours after taking a cathartic. Patient went to bed, and the family physician was called. The next day she felt very much better. She continued to improve, and five or six days after the attack she walked five blocks to the street car and went to one of the stores a mile and a half distant. She was taken worse while at the store and had to be brought home in a carriage and was again put to bed. This attack was similar to the first, but not as severe. She had spells of being better, then worse, and soon became quite ill, so that when I was called to see

her about eighteen days after the first attack I found her in bed with pain and tenderness all over the abdomen, but most marked on the left side. Pulse 100; temperature 102°. There was a mass as large as a fetal head at the lower and left side of the abdomen. I thought the case one of ruptured ectopic gestation and advised operation. Neither the patient nor the friends would consent, although I fully explained the danger attending the delay. I did not, however, explain the cause of her illness. I did not see her again for about ten days. In the meantime, two other surgeons had seen her and had advised operation, which she still declined. When I was again called I found her much worse in every respect; pulse 120; temperature 104°, and her general condition very poor. At that time the patient and her friends wished me to operate. I explained that the result would probably be fatal with an operation, and that it certainly would be so without one; that it should have been done when I first saw her. Even under these conditions they wished the operation, which was performed at the house. I think the operation did neither good nor harm. The patient rallied from its effects, but continued to grow gradually worse, and died four days later. The large mass of blood which was encapsulated had become infected. Examination revealed the chorionic villi, a previously healthy Fallopian tube, with rupture at the junction of the middle and outer third of the ampullary portion. The embryo was not found. Some of the blood was comparatively fresh, indicating that repeated bleedings had occurred. The corpus luteum of pregnancy was found in the ovary that was removed.

CASE X.—Mrs. P., age 31 years; American; married 13 years; menstruated at 12 years. Periods regular and normal until marriage. After that she usually experienced slight dysmenorrhea. Began to be poorly soon after marriage and had never been well since; never pregnant. Had pelvic pain and backache most of the time with more or less leucorrhea. Had missed two periods when I saw her, and two days before was taken with severe pain in the left side; was faint, nauseated and dizzy, and obliged to remain in bed. Examination showed quite a mass to the left and posterior to the uterus; right tube apparently thickened and tender. Diagnosis was ectopic pregnancy with rupture on the left side and salpingitis on the right side. She went to the hospital, and the operation two days later revealed the conditions expected. The debris was examined, showing that the rupture was in the outer part of the ampullary portion of the tube. Rupture quite large

with the escape of the embryo, which was not found; not a large amount of hemorrhage. The tube was thinned and showed signs of old inflammation and loss of epithelium; chorionic villi; corpus luteum of pregnancy in left ovary. The other tube being diseased was removed. The abdominal end of this tube was closed by adhesive inflammation and slightly distended by bloody pus. Nearly the whole mucous lining of this tube was destroyed by the inflammatory process. Recovery uneventful.

CASE XI.—Mrs. D., age 37; German; married 16 years; 4 children, oldest nearly 15 years, youngest 8 years; no miscarriages. Had missed one period and presented the usual symptoms of ectopic pregnancy including rupture which occurred two days before I was called. She was removed to the hospital and operated upon. Examination of specimen showed chorionic villi but no embryo; a previously healthy tube, with no corpus luteum of pregnancy in removed ovary. Recovery uninterrupted.

CASE XII.—Miss S, age 22; was seen by a very competent general surgeon who thought she had appendicitis; menstruated first at 14 years; always regular and periods normal; said she had been perfectly well in that respect. She was of good family and bore an excellent reputation. One night after going to bed as well as usual she was seized with very sharp, lancinating pain in the right side; was extremely tender and sensitive. The pain and tenderness, although not as severe the next morning, were still quite marked, and the doctor had her removed to the hospital. I was at the hospital when the patient arrived, and the surgeon told me that he was going to operate for appendicitis, and asked me to remain and witness the operation. Great was his surprise when he found a perfectly healthy appendix, but a ruptured right Fallopian tube, with considerable clotted blood in the pelvic cavity, all of which was removed. I was allowed by the operator to take what was removed for examination. The tube was ruptured in the middle of the ampullary portion. The rent was small; chorionic villi were found, but no embryo. The tube was thinned, but showed no sign of any previous disease. The ovary had a corpus luteum of pregnancy. About a week later I was allowed to question the patient, and she declared she had not missed a period. That it was time for her to menstruate when she was taken ill, and that the flow appeared that night, but not as freely as usual, and that it was more shreddy. She was questioned no further. Recovery of patient.

These twelve cases are the only ones that I have had in which

thorough microscopical examinations have been made. I did not make the examinations myself. Had I done so, I should have had no faith in what was found. The work was done by reliable men, who were perfectly competent, and about the only result obtained was the demonstration of the fact that previously inflamed tubes are not the cause of ectopic gestation as frequently as is supposed. In nine of the twelve cases reported there were no indications of any old inflammatory disease, leaving only three in which there was previous inflammation of the tube. This certainly would not indicate that inflammation with loss of epithelium was necessary for the occurrence of this condition. I am well aware, that so small a number of cases does not establish anything, yet the lessons derived from them are valuable as far as they go. And when the results are so decidedly one way they cannot be ignored, even if the number of cases be small. Taylor¹ says: "In forty-three cases no certain evidence could be elicited of any pre-existing inflammation." Bland Sutton² is quoted as saying, "In many instances I have failed even after the most careful microscopical examination to find any evidence of old salpingitis or loss of epithelium." He further says, "In fact, a healthy Fallopian tube is more likely to become pregnant than one that is inflamed."³ Martin⁴ wholly rejects the inflammatory theory of the causation of ectopic pregnancy.

Orthman, Dührssen and Kustner⁵ regard the inflammatory as the most plausible etiological factor. A kink in the tube due either to inflammation or congenital malformation is frequently ascribed as the cause.

In my cases there was only one that could be attributed to this cause. Mikulicz⁶ reports ten cases out of a total of about thirty, due to obstruction of the passage of the ovum from mechanical causes. From what I have read, and more especially from what I have seen, it is apparent that the cause of ectopic pregnancy is still a mystery. All that is yet known is, that the impregnated ovum becomes arrested in its passage through the tube, and development of the embryo begins. The arrest may be due to one or more of several causes, some of which are yet unknown. I was unable to find any one cause in my cases that would stand the test of close scrutiny, except in case III, where the lumen of the tube was contracted.

In cases V and XI, as no corpus luteum of pregnancy was found in the ovaries removed, they probably were cases of external transmigration.

In the cases reported, the symptoms were not the same, yet they have a similarity, so that a history of one would aid in the diagnosis of the others.

This is a subject of great importance, and I am well aware that I have not done it justice, yet in the brief time allotted me it is impossible to consider it in all its phases.

405 FRANKLIN STREET.

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¹Quoted by Douglas in Surgical Diseases of the Abdomen, page 818.

²Ibid, page 818.

³Allbutt and Playfair, page 453.

⁴Quoted by Douglas in Surgical Diseases of the Abdomen, page 818.

⁵Ibid, page 819.

⁶American Journal of Obstetrics, September, 1903, page 405.

INTRA-ABDOMINAL TORSION OF THE OMENTUM.

BY

THOMAS B. NOBLE, A.M., M.D.,
Indianapolis, Ind.

QUOTING from Douglas's Surgical Diseases of the Abdomen, "Dr. Jos. Wiener in a contribution to the *Annals of Surgery*, vol. XXXII, 1900, gives us practically all that is known concerning this very rare condition." By a very exhaustive research, Wiener has been able to collect but seven cases, one of which is his own. G. G. Eitel, of Minneapolis, reports in the *New York Med. Record* of May 20, 1899, a case in his own practice which, with Wiener's collection, makes eight cases so far reported. Of these eight cases, five are so intimately associated with hernia as to make of them peculiar complications of that disease, rather than cases of omental torsion *per se*. The other three cases are so far removed from any other tangible pathological process as to attain to the dignity of a classification of their own, and should be properly denominated intra-abdominal torsions of the omentum.

Under this classification, I wish to report the following:

Miss D., an otherwise healthy, robust stenographer, 24 years of age, sent for me on September 15, 1902. The night before, she had suffered from excruciating pains in the stomach, which were attended by nausea and vomiting. She had had these attacks be-

fore at irregular intervals during the last two years, but they had not been so severe as to necessitate the presence of a physician. Her family history was negative. Excepting a gonorrheal infection two and one-half years previous, and the interval attacks of pain in the stomach, she had always been healthy and well; and her general appearance, as I first saw her on the morning of September 15th, was that of one who had always enjoyed good health. I found her with a temperature of 100° F., pulse 90, tongue slightly coated, bowels having moved the day before. Nausea and vomiting had ceased. She lay upon her back with thighs flexed holding hot moist towels to the abdomen. Palpation revealed general abdominal tenderness, with accentuation of rigidity on the right side. Pressure upon McBurney's point elicited great pain in this region and simultaneously in the stomach. "That hurts my stomach and makes me sick," she said. There was slight gaseous distention of the abdomen, but the tympanitic note became distinctly dull in an ill-defined area to the right and below the umbilicus. But owing to the presence of considerable subcutaneous fat and muscular rigidity, nothing definite could be palpated.

A diagnosis of appendicitis was made and operation advised. She refused to undergo an operation, however, and the case was treated by local application of ice and restricted diet. Under these measures the symptoms gradually subsided until the evening of September 21st, six days after the initial symptoms, when she suddenly had a chill, followed by a temperature of 101°. Pain increased, and now a mass could be distinctly felt about midway between right anterior superior spine and umbilicus. Her skin became leaky, and it was very evident that septic absorption was in progress. By this time, the patient appreciated the gravity of her condition and consented to operation.

The abdomen was opened next morning by an incision directly down upon the mass above described. Between the transversalis fascia and the peritoneum quite a little serous exudate was found. On opening the peritoneum, a dark, almost black, mass came immediately into view. It was two inches wide and five inches long. It was everywhere surrounded by recent adhesions,—coils of intestine and omental tissue forming the dense barrier in which the mass was embedded. The walls of the intestinal loops were greatly thickened wherever they helped to form the capsule. Hemorrhage was profuse during the process of dissection. The mass proved to be a process of omentum which had become attached to the firm-

bria of the right tube. With the gastrocolic origin as the proximal point and the adhesion to the fimbria as the distal, an axis was formed about which the omentum had become rolled upon itself to such a degree as to completely shut off its blood supply. Coagulation necrosis was complete, and I doubt not that if it had been allowed to remain, infection with abscess formation would have been the result. The appendix was removed, though it took no part in the production of the symptoms at hand. The patient left the hospital in two weeks and has been in perfect health since.

The pathological sequence in this case is of interest. I take it that during her gonorrheal infection some septic material escaped through the fimbria from a mild salpingitis. A process of omentum immediately came down to take care of this intrusion, became adherent about the fimbria, and thus a continuous band of omental tissue was established between the colon and tube. About this band or axis that portion of omental substance lying on either side was made to roll or *flow* by, probably, the vermicular action of the intestine, together with the unequal degree of regional pressure within the abdomen brought about by transit of gases through the intestinal loops. I have used the word *flow* because the omentum, like a semi-fluid body, passes over, under, through or among the abdominal contents always in the direction of least resistance. Now, let us suppose that we have an axis of rotation formed as in the above case, and that the passage of gases through the intestine from one to the other side of this axis makes unequal pressure on the two sides, and that the omentum will flow or fall to the side of lesser resistance, is it not possible that in this way a torsion might occur? It is only on this hypothesis that I can account for the character of my case. And if such an hypothesis be correct, might not these cases happen with greater frequency than these reports indicate? Torsion might occur with absorption of the mass and nothing remain but bands of adhesions; or, abscess might form and conditions at the time of evacuation be such as to make a proper interpretation impossible.

Intra-abdominal torsion of the omentum is necessarily a complicating or secondary condition to some other pathology. Its diagnosis must be difficult. It may complicate or simulate such diseases as tubercular peritonitis, appendicitis, intestinal obstruction, abdominal new growths and cyst formations, and from the cases so far reported is secondary to hernia more often than to any other one disease.

ACUTE ANTERIOR POLIOMYELITIS.

BY

GEO. N. ACKER, M.D.,
Washington, D. C.

THIS disease is described under names based either upon the pathological conditions found, the results of the disease, or the fact that it usually occurs in childhood: essential paralysis of children, infantile paralysis, acute atrophic paralysis, atrophic spinal paralysis, acute anterior poliomyelitis.

It is essentially an acute disease of childhood occurring suddenly or after some febrile disturbance, and there is a complete loss of power in one or more limbs, followed usually by atrophy of certain muscles. I shall first describe briefly the following cases which have come under my observation during the past year.

CASE I.—R. J., aged 2 years, male, white. July 30th, the child had an attack of vomiting, followed by fever, was constipated and there was loss of appetite. August 1st, he lost control of the left leg and left arm, and could not hold his head erect on account of weakness of the muscles. The plantar reflex was diminished, as was sensation in the affected limbs. The child gradually improved and it was noted, August 20th, that he held his head in better position, and had more power in his leg, his left arm being almost in a normal condition. September 15th. The patient was able to crawl around the room, and the head was held erect. Tactile sensation and plantar reflex appeared to be normal. October 17th. The left leg was slightly atrophied and weak. He was removed from the hospital.

CASE II.—G. H., aged 2 years 7 months, female, white. August 18th, 1903, patient became very restless and had fever. It was noticed that she could not use her right arm as freely as usual. The next day the right leg became affected. She entered the Children's Hospital, August 25th. There was loss of motion in the right arm and leg, with slight tremor when she tried to move them. The fingers of the right hand were flexed, and thumb extended. The toes of the right foot flexed. Plantar reflex diminished. Very fretful. Appetite good and bowels regular. September 3d. Moves the right arm and leg to some extent. Sep-

tember 12th. Considerable improvement. September 20th, discharged cured.

CASE III.—H. B., aged 5 years, female, colored. Was admitted to the Children's Hospital, August 13th, 1903, with the history that after an attack of coryza she lost power over her left leg, on August 12th, and after a few hours her left arm became affected. On admission to the hospital she had very little use of the limbs on the left side. The left arm was held in a flexed position. Tactile sensation was diminished in the left arm and leg. Has pain in the posterior part of the left leg. Very fretful. Temperature normal. Appetite good. August 15th. Has some use of the left arm and moves left leg slightly. August 17th, able to stand and on the 20th could feed herself. August 26th, walks with ease. Is bright and cheerful. August 28th, discharged cured.

CASE IV.—W. H., aged 5 years, male, colored. Entered the Children's Hospital, December 18th, 1902, with the history that for two days the child did not appear well. The appetite was poor, tongue coated, and he had been apathetic to his surroundings. On the 17th he commenced to stagger while walking and shortly afterwards it was noticed that he had difficulty in using his right hand. During the night he had lost all motion in his right arm and leg. Very fretful and cried a great deal, especially when moved. Tactile sensation diminished in the right limbs and also plantar reflex. Did not talk and appeared in a semi-comatose condition. He continued about the same until December 26th, when he began to move the right arm.

January 3d, 1903. Can move the right leg to a slight extent and the right arm in any direction. He talks some and appears brighter.

January 10th. Moves the right leg and arm without difficulty.

February 1st. Walked some to-day.

The latter part of March he had an attack of measles with good recovery and was discharged cured May 18th, 1903.

CASE V.—H. G., aged 4 years, female, white. This case I saw in consultation with Dr. D. B. Street, in July, 1903. She had been sick for ten days when a sudden paralysis appeared on the right side. The patient's brother, six years of age, was paralyzed on the same side July, 1902. He had extreme atrophy of the leg muscles following the attack. The girl did not make a rapid recovery and when she left the city several months after I saw

her she had not regained the use of her limbs and there was some atrophy.

CASE VI.—E. R., aged 6 years, female, white. This child came under observation April 6th, 1903, at the Children's Hospital. April 1st, after complaining of being sick for several days she was found to have difficulty in walking and frequently fell. The next morning she had little or no control over her legs, not being able to stand. Her arms then became affected, especially the right one. Since then her condition has become worse, and she is not able to move her arms and legs except to a limited extent. The right leg is affected more than the left one. Plantar reflex diminished and tactile sensation impaired. Very fretful. The temperature has been normal and appetite good.

April 11th. The child is more cheerful and is able to move the legs some.

April 14th. Slight improvement in the arms. The legs continue to improve. Stood up in bed.

April 20th. Is able to walk about the ward. Can feed herself but with some difficulty.

April 30th. Uses the arms well.

May 12th. Discharged cured.

CASE VII.—B. B., aged 3 years, female, colored. The child was always healthy until August 26th, 1903, when she began to complain of pain in the epigastric region. Three days afterward she became very weak and the next day had lost all power of motion in her extremities with some retraction of the head. She remained in this condition until September 2d; very quiet, except when moved, then she appeared to suffer excruciating pain. That evening she was given a mustard bath after which she moved her arms and legs to a slight degree. On the 4th of September began to move her fingers. She entered the Children's Hospital, September 6th, with the following symptoms: Absolute loss of motion in the extremities, except slight movements of the fingers. Cannot move the body at all. Slight retraction of the head. Tactile sensation greatly diminished. Tongue heavily coated. Is constipated. Has epigastric pain. Temperature 98. Pulse 127.

September 13th. Much brighter. Tactile sensation improved. Decided improvement in motion of lower extremities and muscular power of fingers. Holds head erect.

September 28th. Patient has more control over limbs but cries if they are moved to any extent.

October 17th. Moves about but cannot walk.

November 12th. Patient has good control over the leg muscles. They are not atrophied. Can walk about the ward with ease. The left arm is almost in a normal condition. The upper arm muscles are not strong. The right arm hangs down and she has not the power to lift it up. The muscles of the fingers are active. As yet there does not appear to be any atrophy of the muscles. The abdominal muscles are weak and the abdomen distended.

CASE VIII.—A. W., aged 4 years, 7 months, female, white. After feeling unwell for some days she complained, on January 3d, 1903, that her head was turning around and she had a slight fever the next morning, which became higher during the day, and continued high for a week. She was in a comatose condition and was hard to arouse. The breathing at times was heavy and irregular. The pulse was very rapid. On the 6th it was noticed that she had lost the use of the arms. The night of the 7th she became very nervous and the limbs began to twitch and jerk at times violently. For several days it was only by incessant massage that she could be kept quiet. She appeared to have lost the use of all the voluntary muscles. After the fever she began gradually to recover the use of the muscles. The left hand began to recover first and in a few days she could open and close the fingers of that hand. For some days she was unable to straighten the legs. She could not walk until the end of January. By the middle of February she was able to go up and down stairs, but was not strong on her feet and for months would frequently and unexpectedly fall. She could not sit up in bed until a week after the fever disappeared and it was several weeks before she could hold her head erect. She recovered the use of the left hand but not the arm before she left the bed and it was some months before she could raise her hand to her head without assistance. The right arm and forearm were much slower in recovering than the left and even now, ten months after the attack, she cannot readily open and close the fingers of the hand. She can raise both arms from the elbow but cannot raise either arm from the shoulder unless she is lying down and when in this position she can raise both arms and move them around her head.

Atrophy took place in nearly all of the muscles, but while those of the leg have almost regained their normal size, her arms and shoulders, especially those on the right side, are still thin and do not appear to improve rapidly. For some months she has been under the care of Dr. F. B. Bishop, and much of her improvement is due to his treatment.

The above cases agree largely with what has been observed in regard to the etiology of the disease. It is common in the summer months and during the first three years of life 3 cases occurred in August, and 1 each in July, September, December, January and April. The oldest case was 6 years old, 4 cases were from 4 to 5 and 3 cases were from 2 to 3 years of age; 5 belonged to the white and 3 to the colored race. There were 6 girls and 2 boys. Most of the authorities state that it is most frequent in the male sex, but I do not think that race or sex has any influence in the causation of the disease. Some cases have followed chilling and attacks of acute infectious diseases. I could not find in any of my cases any history which would tend to throw light upon the origin of the disease. Several cases presented the appearance at the onset as cases of influenza. Antecedent events, such as falls, injuries and dentition, have been assigned, but on no sufficient evidence, as causes of this lesion; and beyond the fact that infancy is a distinct predisposing cause almost nothing is positively known in regard to the etiology of this affection. Its onset is often quite sudden, in the midst of what appears to be perfect health. The disease is no doubt due to germs, as they have been found in the fluid drawn by lumbar puncture.

A number of epidemics have been reported and this would prove that there is a common cause for the disease. All the cases had fever and were sick for several days before the paralysis became manifest. In one the attack came on with vomiting. None had convulsions. The lower extremities were first invaded, as a rule, and motion was noticed to reappear in them faster than in the upper extremities. The tactile sensation appeared to be impaired in nearly all of the cases. One case of hemiplegia commenced to improve in forty-eight hours, and in fourteen days was discharged as cured; but in most of the cases the paralysis remained the same for a week or two when rapid improvement took place most marked in the muscles last affected. Four cases make a complete recovery in five weeks with no apparent atrophy. In four cases there was atrophy most marked in the arm muscles. In three cases the paralysis was general. In three cases the right side of the body was involved and in two the left side.

Death rarely results from the disease itself, but permanent paralysis of some of the muscles frequently remains. A muscle which responds to the faradic current after several weeks will ultimately become useful. No doubt that in some of the cases

discharged cured there was later an atrophy of one or more muscles; yet, as the children have never been brought back for treatment this would go to show that if any atrophy took place it was slight and not noticed.

In none of my cases was the diagnosis at all difficult or in any doubt with the exception of Case IV. here the cerebral symptoms were such as to point to a cerebral hemiplegia, and Case VIII., in which the disease in the first stage appeared to be cerebral meningitis, complicating influenza. If, after a short febrile attack or in a previously healthy child, there comes on suddenly a flaccid paralysis with reaction of degeneration and no marked disturbance of sensation, followed by rapid improvement, the diagnosis of infantile paralysis can be made. From cerebral palsies it can be distinguished by the absence of spasticity and the presence of degenerative reaction. From myelitis it is diagnosed by the absence of anesthesia and from neuritis by the sudden onset and freedom from pain along the nerve trunks.

In the treatment of this disease its pathology must be kept in mind. The cause (germs or toxins) is brought to the cord by the circulation, the lesions corresponding closely to the area supplied by the sulco-commissural arteries, which arise from the anterior spinal artery. It is believed by some that the disease is due to thrombosis of some of the spinal arteries or to hemorrhage into the anterior horn. There is hyperemia of the spinal membrane and gray matter. Numerous leucocytes and some blood cells are found in the affected area. There are also numerous round cells and the neuroglia reveals proliferative changes. Degenerative changes are noticed in the motor neurons. Atrophy of the anterior cornua and their nerve cells takes place, and granular degeneration and atrophy of the anterior nerve roots. Atrophy of the anterior columns occurs particularly in the cervical and lumbar enlargements where the nerves that supply the atrophied limbs are given off.

In most cases the atrophied muscles are found to have undergone fatty degeneration with disappearance to a greater or less extent of the transverse striae. Oil globules and numerous fat cells are also found between the fibers. As it is impossible to make a diagnosis of this disease until the paralysis takes place, the early stage is treated as any other febrile condition with rest in bed, a mild laxative and a simple febrile mixture, or if the fever is high, by sponging with cold water. When the nature of the trouble is diagnosed counter-irritants to the spine and the internal

use of ergot and belladonna have been recommended but I think with doubtful results. Salol and the salicylates have been found to be of some value.

When the paralysis begins to subside tonics such as strychnine, iron and cod-liver oil may be beneficial. The nutrition of the muscles must be preserved. To this end massage and electricity are to be employed. Larat (*Brit. Med. Journal*, Sept. 25, 1897) believes that the only remedy of value in this disease is electricity. No matter how grave the case may be, electricity should be employed as soon as the diagnosis is made. Faradism is not only useless, but is positively harmful, for every time a muscle in the state of atrophy and which does not respond to the current, is faradised the tendency to atrophy is increased. It is therefore the continuous current which should be used. The treatment should be carried out with great patience and no decided result must be expected for a long time. The slightest case will require a years' treatment, a severe case several years; but the earlier the treatment is begun the better, and electrical intervention in the very beginning, especially during the febrile period, is of the greatest importance.

REPORT OF THREE CASES OF ESTHIOMENE.

BY

EMIL E. GUENTHER, M.D.,
Newark, N. J.

With four illustrations.

CASE I.—This case came under the care of Dr. E. J. Ill about eighteen years ago. I am unable to find the history in our case-book at the hospital, but as I took this case to Dr. Charles H. Kelsey, of New York, at the request of Dr. Ill, and he has reported the same in his "Surgery of the Rectum and Pelvis," I will quote him. I have by the kindness of Dr. E. J. Ill, of Newark, N. J., seen a very unusual case of this disease (esthiomène) inasmuch as the patient was only fourteen years old, and had been suffering since the age of nine. The usual manifestations were perfectly characteristic; the labia were enormously hypertrophied, and destruction of the rectum was so great as to lead me to advise a colostomy. In this case there was a good history of congenital

syphilis, and to my surprise the patient was greatly relieved by antisyphilitic treatment. (Kelsey.)

Dr. Ill informs me that this is a mistake, and the patient was not benefited by antisyphilitic treatment, but her condition was unchanged when he last saw her, several years since.

CASE II.—Mary V. D., aged thirty years, married, has had four children and four abortions. Cause of abortions unknown. Last pregnancy eight years ago. Abortion at fourth month.

Case II.



First menstruation, fourteen years, normal. Family history good. Present illness three years. Admitted to Dr. Ill's ward service at St. Barnabas Hospital, of Newark, N. J., during September, 1887. Physical examination September 16, 1887.

Vulva and both sides of the thighs excoriated, also the skin above the pubes and the lower part of the abdomen and up to the sacrum posteriorly. Labia very much swollen. Right labium majus larger than the left; from the right labium minum arises a tumor two and a half inches across and five and a half inches

around. It is lobular and edematous. Several smaller growths of the same description are attached along the orifice of the vagina. The perineum is deeply lacerated, and covered with scars. There is an opening from the vagina, just above the sphincter into the rectum, through which a finger can be passed. The rectum is small and full of cicatrices for about two inches in depth. The urethra is split up to the neck of the bladder, and the finger can be passed into the bladder. The disease was

Case II.



thought to be specific in nature, and she was given antisyphilitic treatment. October 7, 1887, the tumors were removed and the resulting wounds closed with catgut.

October 21st; has slightly better control over her bladder. Patient discharged somewhat improved. She was advised to continue specific treatment and to report at our clinic for observation.

On September 9th, 1891, she was again admitted to the hospital. The most annoying symptom is incontinence of urine, as the result of which there is considerable excoriation about the thighs

and buttocks. At no time has there been pain (except that produced by the excoriations) and, although she has now been ill with this disease for seven years, her general condition is still good and she is well nourished. She has not improved since her discharge.

CASE III.—Christina H., thirty-three years old, admitted to Dr. Ill's ward service at St. Barnabas Hospital, of Newark, N. J., May 10th, 1903. She has had one child. No abortions. Family history good. General health good. Present illness two years. Examination under ether. Hypertrophied excrescences about the

Case III.



anus. Ulceration of the rectum. About three inches from the anus there is a stricture of the rectum which will not allow the passage of the tip of examining finger. Excrescences removed, the resulting wounds being closed with catgut sutures. Stricture of the rectum stretched.

Patient discharged May 30th, not improved, and is now under treatment for the stricture of the rectum at my clinic at St. Barnabas Hospital. This patient has had no pain, and she applied for treatment only because she thought the tumors about the anus were piles, for which she ought to have treatment.

A study of these cases of esthiomène shows this disease to be a rare one, only three cases having been seen during a hospital service of twenty years. It is interesting to note the amount of destructive changes possible with the preservation of fair general health, and also the duration of the disease. The intractability of the disease to treatment may be of interest to the medical man, but it does not tend to increase the faith of the patient in our ability to cure the disease.

Authorities differ as to the cause. Some consider it one of the manifestations of syphilis; others think it tubercular in nature.

Case III.



They all agree on its resistance to treatment, and its destructive qualities. The prominence of some of its symptoms is responsible for the differences in name and definition: elephantiasis vulvae, lupus, l'esthiomène, ulcus vulvae, chronicum elephantasticum, lupoid ulceration, ulcus rodens vulvae, all apparently meaning and describing the same disease.

James P. Tuttle in his "Treatise on Diseases of the Anus, Rectum and Pelvic Colon," describes the disease under the name of "Lupoid Ulceration of the Anus," and says: "Recent studies in pathology, however, have shown it to be only one of the many

manifestations of tuberculosis. It is of a particularly aggravated form, slow in its march, yet fearfully destructive of tissues."

J. Veit, in the *Handbuch der Gynaekologie*, describes the disease under the name of "Ulcus rodens vulvae." This is one of the best descriptions of the disease I have been able to find, and I herewith give the views as expressed in that valuable book.

I should like to prove that the diseases, ulcus rodens, elephantiasis, and tuberculosis are intimately related to each other, and still more would I like to describe this relationship. After some observations, however, and careful review of the literature covering this subject, I am unable to do so. The cases of the first named disease are on account of their rarity not as yet numerous enough. The cases of the others, on the contrary, are not always to be made use of.

Ulcus rodens is characterized by slow healing ulceration, with sharply defined edematous swellings of the surrounding tissues, and a great inclination to form fistulous tracts, which lead to neighboring organs. Elephantiasis presents hard, circumscribed edematous swellings, frequently accompanied by papillary excrescences. Tuberculosis shows specific ulcerations with small nodules in the surrounding tissues. But, as we may find tubercle bacilli in ulcus rodens, so will we find well-marked tuberculosis with the edema resembling elephantiasis, and in elephantiasis, ulceration.

Whether syphilis or tuberculosis is the cause, or whether the skin, infected with either disease, is more easily affected by the other, is still doubtful. I consider it important to call attention to the fact that, although there appears to be no connection between these three diseases, there still seems to exist a near relationship between them. It has lately been observed that peculiar ulcerations of the vulva are associated with edematous swellings and excrescences, and that there appears to be some connection between these apparently different forms of disease. They have been described, but have not been closely observed. There are ulcerations of the urethra, which are especially found in prostitutes. The definition of the disease varies greatly in different text-books. I consider "ulcus rodens vulvae," proposed by Virchow, the best name for the disease.

The anatomical characteristics are a peculiar, sharply defined, edematous swelling associated with an obstinate ulcerative process, which is frequently found in the fossa navicularis, and the opening of the urethra, leading in the former case to recto-vaginal

fistula, and in the latter to complete destruction of the urethra. It is also frequently complicated by rectal stricture. This description by Schroeder corresponds with esthiomène of the French authors. Huguier has given this name to a destructive and, at the same time, hypertrophic ulceration of the vulva, and this name is still in use in France. Pozzi calls attention to the fact that this affection lacks the destructive elements of cancer, and that there is a certain resemblance to lupus of the face, which has led to the use of the term, lupus of the vulva.

Pozzi differentiates between l'esthiomène erythemateux and tuberculeux, according to whether the ulceration be superficial and resembling lupus of the face in color, or whether the floor of the ulceration is covered by strongly proliferating granulations. While repair goes on in one part of the ulcer, ulceration goes on in another part. The hypertrophic and ulcerative form are usually combined, but each may appear separately. Pozzi also speaks of "Rectal and Vesical Fistulæ" and of strong cicatricial retractions after healing. It is our object to show that esthiomène, lupus of the vulva, and some of the excrescences of elephantiasis are identical with ulcerous destruction of the vulva.

The etiology of these chronic ulcerations is not definitely known. The anatomical examinations show nothing characteristic. Pozzi has frequently found giant cells in the tissues, and claims that Martin and Nicolle found tuberculous masses, and several tubercle bacilli in one case. F. Koch could not demonstrate syphilis or tuberculosis. He found no giant cells, but Pinner found them. Tubercle bacilli were not found by Pinner. Van Gieson found giant cells, and Unna found them in two cases. The presence of tubercle bacilli is doubtful. Cheesy degeneration, as found in tubercular nodules, has not been described, and the demonstration of tubercle bacilli has only seldom been successful. Only Martin and Nicolle speak of them. Fehling and also Küstner support the name "Lupus." V. Winkle considers the presence of giant cells as positive evidence of tuberculosis. Koch mentions a work of Riehl who found tubercle bacilli in two cases of peculiar fibromatous tumors of the anal region. He agrees with Pick, who believes in a secondary infection from tuberculosis of the rectum. We cannot ignore the possibility of a later tuberculous infection of the ulceration, but it seems positive that this is not necessary for the appearance of the disease.

Infection and traumatism will of course have to be considered important factors in the etiology of this disease. The disease

is found almost exclusively in prostitutes. Schroeder emphasizes the mechanical insult of cohabitation. F. Koch considers the total extirpation of suppurating inguinal glands as a cause. A previous syphilitic infection may be admitted in most of the cases. The ulceration has lost its specific character, and is not affected by mercurials or iodides. The general health is affected but slightly. The diagnosis is difficult. The disease, however, has this peculiarity: Excrescences, hard, edematous swellings and ulcerations are found at the same time. The differential diagnosis between this disease and carcinoma must, in doubtful cases, be decided by the microscope.

The prognosis is not favorable. When there is considerable swelling of the labia majora with excrescences, and ulceration of the fossa navicularis, with rectal fistula and stricture, there is no hope of recovery.

The treatment is not very promising. The tumors are to be removed. The resulting wound is closed with catgut sutures, or cauterized with the Paquelin cautery to stop bleeding and possibly hasten the process of healing.

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ABDOMINAL SECTION DURING PREGNANCY, WITH REPORT OF SIX CASES.

BY
X. O. WERDER, M.D.,
Pittsburg, Pa.

It is now a generally accepted fact among abdominal surgeons that pregnancy is no contraindication to any necessary abdominal operation. This is particularly true of ovarian tumors. Gestation does in no wise alter their usual progress, nor does it interfere with the changes and complications to which they are frequently subject in the course of their development. Their growth is not retarded in the presence of pregnancy as has been taught, but probably rather stimulated and increased. Pregnancy, however, brings additional dangers to the patient suffering from an ovarian cyst, both before and during labor, and also in the delivery and the puerperium. Litzmann found among 56 cases with ovarian tumors only ten normal deliveries. Labor and the puerperal period seem to favor in a marked degree torsion of the pedicle, infection and gangrene of ovarian tumor. In my own experience peritonitis and serious infection of cysts have been observed during the puerperal period. According to Remy's¹ observations, twenty-three per cent. of the mothers succumb to the complications of ovarian cyst with pregnancy, under the expectant treatment. Swan² places the mortality even higher, at forty per cent.

It is, therefore, not a small matter to the safety of the mother whether an ovariectomy be delayed until after delivery, or whether prompt surgical intervention be adopted. In fact, delay and procrastination, for the reasons given, are far less excusable during the existence of pregnancy than in the absence of this complication, when we consider that the operation during pregnancy presents no more difficulties or dangers than at any other time. In one hundred and forty-six cases tabulated by Orgler³ there

¹Orgler, *Zur Prognose und Indication der Ovariectomie während der Schwangerschaft*, Archiv d. Gynecol., Bd. 65, p. 126.

²Swan, *The treatment of solid ovarian tumors complicating pregnancy*. Johns Hopkins Hospital, Rep. 1898, page 56.

³*Ibid.*

were four deaths due to operation or a mortality of 2.7 per cent., a result difficult to surpass in ovariectomies uncomplicated by pregnancy.

Of considerable interest and importance, in addition to the safety of the mother, is the effect of ovariectomy on gestation itself and the final delivery. In the one hundred and forty-two cases who survived the operation, as reported by Orgler, pregnancy was interrupted in thirty-two, or in 22.5 per cent. Statistics given by other operators give very nearly the same figures with the exception of those of Bovée⁴. He reports thirty-eight cases of removal of both appendages with one death and followed by abortion in only four cases, or 12.6 per cent. The removal of both appendages, therefore, does not only not increase the liability to miscarry, but seems rather to diminish it. The writer has no doubt, that if all cases could be operated on during the early months of pregnancy, before the size of the uterus necessitates extensive manipulations of that organ during the operation, very few pregnancies would become interrupted. When we consider that among Remy's three hundred and twenty-one ovarian tumors complicated by pregnancy fifty-five or 17 per cent. aborted without operation, we must admit that the operation has very little tendency to interrupt gestation. In fact, the removal of one or both appendages exercises very little, if any influence on the pregnant uterus, and the complication of pregnancy, therefore, need not deter us from the necessary operative treatment. On the contrary, on account of the increased risks to which the patient is subjected, it should induce us to act all the more promptly.

While prompt operation is unquestionably the rational treatment for neoplasms of the ovary complicating pregnancy, tumors of the uterus, particularly fibroids, occupy a somewhat different position. They rarely jeopardize the life of the mother and seldom seriously interfere with the course of gestation and delivery. We may except, however, the tumors situated in the cervix or the lower part of uterus, which at times obstruct the birth-channel; and also submucous fibroids—fortunately not often accompanied by pregnancy—which may give rise to hemorrhages during pregnancy and delivery, and subsequently by sepsis and sloughing seriously endanger the life of the puerpera. Subperitoneal, and even interstitial, fibroids of small or moderate size are usually harmless

⁴Removal of both uterine appendages during pregnancy. (*American Journal of Obstetrics*, Feb., 1900.)

complications of pregnancy and require attention only when they produce marked peritoneal irritation, or by their rapid growth encroach upon the kidneys, digestive organs, or diaphragm. The author has observed many cases of fibroid tumors with pregnancy, but found indication for operation only in two. In several of them during the early months, while the uterus containing the fibroid or fibroids was still confined to the pelvis proper, crowding and packing it so completely that interference was seriously considered, all the symptoms subsided promptly, as soon as the fundus had ascended into the roomier abdominal cavity, and the pregnancy thenceforth pursued a normal course.

When a fibroid uterus during pregnancy produces symptoms of sufficient gravity to justify interference, emptying the uterus of the products of conception is hardly the proper procedure in the writer's opinion, because it does not remove the actual source of trouble, and because septic complications not infrequently follow abortions in such cases.

Hysterectomy, or, in favorable cases of subserous, particularly pedunculated fibroids, myomectomy seems to be the most rational and safest procedure. Each case of fibroid tumor complicating pregnancy must, therefore, be considered by itself, and no sweeping general rule can be applied to this class of neoplasms. The experienced judgment of the operator, as well as of the obstetrician may be required to decide upon the best course to be pursued in each given case.

The following report covers six abdominal sections performed during pregnancy, these being all the cases of this character coming under my observation, not including, however, Cesarean sections and ectopic gestations. Five of these were pelvic neoplasms, and one the removal of a firmly adherent, diseased ovary and tube, previously the seat of a large abscess which had been incised and drained. Three neoplasms were ovarian tumors, two of which were unilateral oophoritic cysts, and the other a dermoid of both ovaries, requiring the removal of both appendages. Two hysterectomies were performed for large multiple fibroids of the body of the uterus, which, after the fourth month of pregnancy, gave rise to very serious discomfort from their very rapid enlargement. All cases made a very good, uninterrupted recovery. None of the ovariectomies miscarried or even had any symptoms of miscarriage, though in one case the whole uterus had to be turned out of the abdomen to gain access to a bleeding surface in the bottom of the pelvis. Three of them went to term and had

normal labors and deliveries; and in one case no information could be obtained in regard to the subsequent course.

The period of pregnancy at which the operation was performed in the hysterectomies was at four and a half and five and a half months respectively, in one ovariectomy at six months, one at three and a half months, in the double ovariectomy at four and a half months, and in the salpingo-oophorectomy for diseased appendages between two and three months. The last one was the only case in which the existence of pregnancy was somewhat in doubt before the operation.

CASE I.—Double ovariectomy for bilateral dermoid. Mrs. E. B., referred by Dr. Koontz, New Kensington, Pa. Age 29; married six years; two children; labors normal.

Present Condition.—Has not menstruated for four and a half months; fetal movements and other signs of pregnancy. About six weeks ago was seized with severe pains in region of appendix and diagnosis of appendicitis made by attending physician. Admitted to Mercy Hospital, November 24, 1902.

Evidence of pregnancy of about four months confirmed on examination. Mass on right side in region between appendix and ovary and extending into Douglas' cul-de-sac. Round, firm mass in region of left appendages.

Operation December 7, 1902. Dermoid tumor of right ovary, firmly adherent, ligated and removed; appendix also removed being involved in adhesions. Left ovary also contained dermoid, which was adherent and in delivering it, it was torn of its pedicle. The pregnant uterus was then delivered through the abdominal incision and wrapped in hot towels and the bleeding vessels secured in the pelvis.

The dermoid on left side measured 6 cm. x 4.4 cm. x 3.2 cm. By its anterior surface, it was adherent to bladder and to side of uterus; the pedicle seems to have been twisted as it was very slender, almost like a cord. The right dermoid measured 5.2 x 4 x 2 cm., was contained in the cul-de-sac and adherent there. Both contained hair, fat, etc. The appendix was elongated, thickened and adherent.

The patient was put to bed and a suppository of powdered opium given by rectum. She made an uninterrupted recovery and left the hospital within four weeks.

She was at home about two months when she developed sudden and severe eclampsia which kept her in a very critical condition for about four or five days. The urine was fairly loaded with

albumin and casts. The attack subsided under appropriate treatment and pregnancy went on to full term. The patient was then delivered of a healthy child in normal labor.

CASE II.—Mrs. G. B., referred by Dr. Shallenberger, Rochester, Pa. Admitted to Mercy Hospital June 10, 1899. Age 29. Family history negative. Always in good health; menstruation regular and normal. Married seven years. Never pregnant until now (three months). Six weeks ago fell from bicycle and hurt left side severely. On examination large mass can be outlined on left side of pelvis which is soft and elastic. Uterus enlarged to size of three months' pregnancy and displaced to the right side by the cystic tumor in the left.

Operation June 12. Removal of cyst size of adult head imbedded in adhesions of recent origin. Uninterrupted recovery and discharged from the hospital July 8, 1899.

Normal labor and delivery at full term.

CASE III.—Right salpingo-oophorectomy. Mrs. G. M., referred by Dr. Blessing, Pittsburg; 31 years old, one child, eight years old. Several years afterwards was confined to bed for several months with an abscess in right ovary, which was opened and drained per vaginam. Menses always irregular.

At time of admission had not menstruated for over two months. Complains of very severe pains in the right side, preventing her from getting about; these pains more severe during last months. Examination showed uterus considerably enlarged, fundus drawn over to the right side and firmly adherent there. Cervix soft and somewhat patulous; pregnancy suspected. On opening the abdomen the fundus was found imbedded in adhesions on the right side, the ovary and tube very firmly adherent to the floor of the pelvis and was enucleated with very great difficulty. The left ovary was also adherent, but when loosened from its attachments, it proved to be practically normal and was, therefore, not removed. The uterus showed undoubted evidences of pregnancy of at least two months. The patient made an uninterrupted recovery and was relieved of all pains. She left the hospital in four weeks in good condition. Having lost sight of her, nothing is known of her subsequent history.

CASE IV.—Ovariectomy at six months; very large cyst. Mrs. McG., referred by Dr. H. H. Clark; 30 years old; four children. Admitted to Mercy Hospital June 30, 1903.

About two months previously was called in consultation by her attending physician and found her suffering intensely along

the right side extending from the margin of the ribs down to the crest of the ilium with marked tenderness on the slightest pressure. Every motion of the body increased the pains quite considerably. Palpation was so painful that no satisfactory examination could be made; but a distinct fullness and rigidity could be noticed in the right side of the abdomen, independent of the pregnant uterus, which could be pretty well outlined. The pain and tenderness subsided within a few days, but the abdomen rapidly enlarged after that, so that at the end of the sixth month she was unable to lie down on account of the enormously distended abdomen.

Operation July 1st. Ovarian cyst situated above and to the right of the pregnant uterus; anterior surface firmly adherent to the right abdominal wall just over the area at which the pain and tenderness were so very marked two months previously. All manipulations of the uterus were avoided during the operation, excepting when separating slight adhesions to its left wall.

The specimen consisted of large, thin-walled oophoritic cyst of left side. Contents measured three gallons. Patient made an excellent recovery and had a normal labor and convalescence.

HYSTERECTOMY FOR FIBROID UTERUS COMPLICATED BY PREGNANCY.

CASE I.—Mrs. G.; referred by Dr. J. J. Green. Admitted August 2, 1895. Age 34. Family history negative. Always in good health. Menses at 16, always regular and normal. Married two years; never pregnant until now, five months. Had been feeling as well as usual until about one month ago, but much worse during last week when, after severe physical exertion she developed severe abdominal pains.

Abdomen much enlarged, but irregular; round in shape; a hard mass, resembling fetal head, can be felt extending up to epigastrium; fetal movements very distinct and heart sounds audible. Consistency of tumor filling up the abdomen variable and contour very irregular; two or three hard masses can be made out connected with pregnant uterus.

Operation August 4th. Three large subperitoneal fibroids, size of fetal head attached to uterus. Suprapubic hysterectomy, removing tumor and uterus all in one mass without rupturing membranes. Patient made a good, uninterrupted recovery.

CASE II.—Mrs. C.; referred by Dr. Neff, Masontown, Pa. Age 39 years. Family and personal medical history negative. About

two years ago noticed a gradual enlargement of the abdomen. No pain. Married five months. Last menstrual period a little over four months ago. Examination shows uterus enlarged to about four months' pregnancy to which were attached several subperitoneal fibroids of various sizes, filling up the abdomen to above umbilicus; suffering much from pain and distention during last month with inability to get around, discomfort increasing from day to day.

Operation May 12, 1903. Large number of fibroids of various sizes from pea to fetal head, contained in uterine walls. Attempt was made to enucleate larger ones with the hope of being able to save the uterus and fetus, but the hemorrhage was so profuse that I was compelled to do a supravaginal hysterectomy. The uterus was removed with the membranes intact.

With the exception of a slight phlebitis of the left limb, occurring at the end of the third week, she made an excellent recovery.

524 PENN AVENUE.

THE CHOICE OF METHODS FOR CLOSING THE ABDOMINAL (PARIETAL) INCISION.

BY
EDWIN RICKETTS, M.D.,
Cincinnati, Ohio.

HERNIA following any abdominal incision is looked upon as a reproach, even though preceded by brilliantly applied intra-abdominal surgery, and the desired results in all other respects obtained. We have incontrovertible proof that the ideal method for closing the abdominal incision has not been attained. The secondary sections for hernia should satisfy the most critical that my statement is correct; and to this should be added the cases from which buried catgut, silkworm gut, silver wire, kangaroo tendon, with and without suppuration is being removed. Rapid transit carries to his or her home many a patient who has been duly recorded as cured. Hernia develops to be detected by the family physician anywhere from six months to a year or more later. That hernias occur following many operations done even in the larger and best conducted hospitals of the land, is a fact. These institutions are the ideal workshops to many, from which they would have us to believe that perfect asepsis and antisepsis exist continuously from

the hour of entrance to the institution to the ending of the needful surgery. Notwithstanding the institutional buried suture exponents and their adherents, enough buried sutures have worked out and are being picked out to furnish much material for serious surgical reflection.

Hernia never occurs above the upper or below the lower angle of the line of incision; it is always directly within it. The theory of the shortest possible incision is backed up by practical results. It should be made through the linea alba, caution being taken that the sheath of either rectus is not cut through, for this is the natural tissue for binding and holding better together the long connecting fibers of the rectus muscles.

Aseptic methods must come as the result of the eternal vigilance of common surgical sense, which should reign supreme. You have inflicted the incision; as far as it is possible, it is yours for the necessary manipulation, not for the fingers of another. Aseptic union is an operator's ideal that has never been attained. It is, in other words, an impossibility; to well-nigh reach it, however, is quite possible.

The kinds of material generally in use are silver wire, silkworm gut, kangaroo tendon, catgut, and silk. Terrace suture of catgut consists virtually of a continuous Lembert suture, beginning at one angle of the peritoneal incision (layer by layer), and ending at the other angle of the skin incision, but not penetrating the same. The objections to this method are:

First: The material used is a foreign body. Second: Added risks of infection. Third: The coaptation of the peritoneal, fascia, and fat edges is uneven; they are rolled in on themselves until the line of the incision is "corded." Fourth: The suture pressure is continuous and by the engorgement of the tissue in the healing process, it must be increased at times to strangulation. The tax for absorption of this catgut by the tissues in which it rests is surgically imposed.

The contribution of Dr. Dorsett on the infection of catgut at our meeting in Washington last year should be read to be appreciated.

Some close the peritoneum with a Lembert suture of catgut, or silk, and close the remainder of the wound with buried silkworm gut, kangaroo tendon, silver wire, or silk. With this or the terrace suture, the peritoneum drops away from the muscles, leaving a space which of itself is a serious objection. The peritoneum will absorb or digest catgut or fine silk sutures. Muscle fascia and

fat are comparatively poor media for absorption of the foreign bodies under consideration. Buried shotted wire suture deserves but a passing thought, and that merely to condemn it. The same can be said of the through-and-through silver wire suture, the removal of which is on the line of surgical barbarism. Some operators first adjust for tying the through-and-through suture of silkworm gut or silver wire, closing the peritoneum with fine silk or catgut. The fatty tissue is brought together by a longitudinal corkscrew suture of silkworm gut, the lower end coming through the skin just below the lower angle of the skin incision, the upper end coming out through the skin just above the upper angle of the incision. Both ends are buttoned tightly, after which the through-and-through sutures are tied, or shotted as the operator may select. Through-and-through sutures with the corkscrew suture are removed by the tenth day. Possibly the oldest suture material for through-and-through work is pure silk. Some prominent operators of to-day make use of it. With thorough asepsis it is a question if this material cannot be used as successfully as the silkworm gut for through-and-through suture; providing it is removed within five days. To my mind the through-and-through sutures of silkworm gut, with the closure of the peritoneum with interrupted sutures of fine silk, will permit us to attain nearer the ideal method than any other. Silkworm gut is impervious to any infection. It is easily rendered aseptic by boiling.

We should work with an eye to the dry method from the beginning to the end of the parietal incision, using a long-handled Peaslee needle, with an eye sufficiently large to carry the suture material with ease. Standing on the right side of the patient, let the unarmed needle point penetrate the peritoneal edge at the lower angle one-quarter of an inch from the edge opposite. Before starting the point through the sheath of the rectus, push the peritoneum back so that a good hold on the muscle can be obtained, letting the needle point penetrate the same from one-half to three-quarters of an inch from the line of incision. Then thread the needle with the silkworm gut, after which withdraw the threaded needle leaving the suture *in situ*. Next start the unarmed needle point through the skin on the side of the incision nearest to the operator in line with the opposite needle puncture one-quarter of an inch from its edge, going through the muscle, including one-half to three-quarters of an inch to come out through the peritoneum one-fourth of an inch from its edge. Then thread the needle with the peritoneal

end of the silkworm gut, withdrawing the threaded needle, disarming the same. Repeat this process at intervals of not more than one-half inch until the wound is ready for closing. Close the peritoneum with interrupted sutures of fine silk midway between the interrupted through-and-through sutures. Render the field of operation, including the sutures, as nearly aseptic as possible by wiping both with gauze moistened with 98 per cent. alcohol. The greatest care should be exercised in tying each suture. To tie them too tightly means more damage, promising a greater number of hernias than to tie them in a looser manner. Cut the tied sutures to the desired length, washing them again together with the skin surface of the entire abdomen with alcohol. Dress the wound with carbolated gauze held in place by means of the oxide of zinc adhesive plaster. Keep the wound dry and know that it is dry, even if the wound has to be exposed to the air daily. Remove the stitches as they are indicated anywhere from the fifth to the tenth day. This is the technic that I advise and employ.

408 BROADWAY.

TRANSACTIONS OF THE CHICAGO GYNECOLOGICAL SOCIETY.

Meeting of December 18, 1903.

The President, DR. EMIL RIES, in the Chair.

DR. JOS. B. DELEE presented a case of probable

SPONDYLOLISTHESIS.

The patient is 19 years old, married, and pregnant about three months. When six years old she fell out of bed, injuring her spine so severely that she was laid up in bed for three or four months. After her recovery nothing abnormal was noted. She presented herself about three weeks ago because of her pregnancy. External measurements showed the spines and crests of the ilia to be normal, but on taking the Baudelocque a pronounced protuberance over the upper part of the sacrum and the lower lumbar region was discovered. The pelvic inclination was obliterated almost entirely. The sacrum was hollowed out and converged towards the pubes from above downwards. Two large blood-vessels, probably the internal iliacs, were palpable from the vagina without any difficulty. The walls of the pelvis and the pubes came together making a funnel-shaped outlet. The distance between the tuberosities of the ischium was not over 7 cm. Although it was impossible to make a thorough examination at

the time, yet all the findings pointed to a probable spondylolisthesis. A complete examination, including the making of a skiagraph, will be made at the first opportunity.

The patient is one of a family of contracted pelves. Her mother has a generally contracted pelvis of rachitic type. Her sister has a contracted pelvis and was in labor for several days but finally delivered herself spontaneously and the child showed extremely marked dolichocephalus. The findings on which the diagnosis in this case is based are the prominence over the lumbar spine, the shortness of the abdomen, and the loss of pelvic inclination, the anterior superior spines and crests of the ilia being almost on a level.

DR. GUSTAV KOLISCHER.—I think this is a case of fracture of the spine, because we have here a convexity, and not a concavity as is seen in spondylolisthesis. Of course, it is impossible to express a positive opinion without making a thorough examination of the case.

DR. EMIL RIES.—I have seen one case of spondylolisthesis in which the gibbus was absent and which showed a concavity where the lumbar vertebræ ended and the sacrum began. The absence of the pelvic inclination in this case is very marked, but it is found absent in other pelvic deformities.

DR. DELEE.—I do not wish at present to defend very strongly the diagnosis of spondylolisthesis. In making the diagnosis I considered first, fracture of the spine, and second, the kyphotic pelvis of rachitic origin, the so-called pelvis kyphotica obtecta, in which the lumbar spine is bent down over the inlet of the pelvis. However, a gibbus is one of the characteristic signs of spondylolisthetic pelves. Bumm in his latest work shows photographs of these cases in which the gibbus was very pronounced. Williams brings that point out in his text-book. The essential element of the spondylolisthetic pelvis is the slipping down of the body of the last lumbar vertebra over the sacrum, and if the body of the vertebra slips down the interarticular process must either stretch or break. If there is a history of injury there was probably a fracture of this process of bone, or of that which goes between the body of the vertebra and the spine. Now, the spines remain where they are but the body of the vertebra slips down into the pelvis which makes the pelvis obtecta. The sacrum tilts forward because, if the patient's body tips forward she throws the shoulders back and that brings the sacrum forward and that is what produces the gibbus. The case certainly is worth a great deal more study than I have been able to give it.

DR. REUBEN PETERSON, Ann Arbor, Mich., followed with a presentation of specimens. The first was a specimen of

SARCOMA OF THE UTERUS.

The patient, a girl of 16, had been in failing health for the past two years. For the past six months, her abdomen has been increasing in size and she has suffered a great deal of

pain in this region. She has grown decidedly weaker and has lost a great deal of flesh. Examination showed an abdominal tumor extending from the pubes to a short distance above the umbilicus. On the left side it extended to the anterior superior spine, on the right upwards nearly to the border of the ribs. There was a marked protrusion of the umbilicus and the abdominal veins were enlarged. The growth was solid, immovable and quite sensitive. Bi-manual examinations showed the cervix carried well up behind the pubes. The pelvis was filled with a hard, immovable mass continuous with the tumor above. A diagnosis of malignant disease of the uterus was made and an unfavorable prognosis given. At the urgent request of the family, the removal of the growth was attempted. A median, abdominal incision carried well above the umbilicus revealed an enormous tumor, springing from the pelvis. The omentum and intestines were attached to the upper border of the growth. The mass was wedged in the pelvis and great difficulty was experienced in its removal. Enlarged glands could be palpated along the aorta, some of them as large as English walnuts. The tumor is as large as an adult head, lobular and of a grayish-white appearance. Microscopic examination showed the growth to be a large round cell sarcoma. The patient died 36 hours after the operation.

UTERINE FIBROMATA, COMPLICATED WITH EDEMA AND LIQUEFACTION NECROSIS.

Two specimens of uterine fibromata with edema and liquefaction necrosis were next shown. In once case the tumor reached above the umbilicus and in portions was distinctly cystic. It had been diagnosed as an ovarian cyst. In the other case, the cystic contents of the growth could be palpated through the posterior cul de sac. Myxomatous degeneration is the term usually applied to such changes but microscopic examination showed no mucin present. Curiously enough, the muscle fibers persisted after the fibrous tissue had become liquefied. The reporter had never met with this condition, although he had removed many and all varieties of uterine fibroids.

LARGE SARCOMATOUS GROWTH SPRINGING FROM THE NEIGHBORHOOD OF THE INTERNAL OS.

The patient, aged 53, had suffered from menorrhagia for many years. Examination showed a large pelvic tumor. The external os was dilated so as to admit two fingers. Through this presented a sloughing mass, which, when removed, was found to be the size of the two fists. The posterior cervical wall was slit downwards and the mass enucleated by introducing the whole hand within the dilated uterine canal. The growth had a distinct capsule and microscopically proved to be a sarcoma. Two or three weeks later the uterus and appendages were removed by the abdominal route. Microscopic examination of the uterine

tissue showed no evidence of sarcomatous change. As the growth was encapsulated it may have been a sarcomatous degeneration of an intrauterine polyp. Apparently the second operation went outside of the disease. It will be interesting to watch the after history of the case.

EPITHELIOMA OF THE VULVA.

This specimen consisted of the excised external genitals of a woman of 45. The right labium minus and clitoris were the seat of an epithelioma 4×2 centimeters. There had been symptoms of irritation about the vulva for six months and the patient had suffered from gradually increasing pain up to the present time. The edges of the ulcer were hard and indurated. It approached but did not involve the meatus urinarius; the right inguinal glands were enlarged and tender. The operation in this case was very radical, including the removal of the glands from both inguinal regions and both labia were removed by an elliptical incision. The vaginal mucosa was united to the outside skin by interrupted silkworm gut sutures. The inguinal glands are being cut and examined serially to ascertain if they have been involved in the carcinomatous process.

LIPOFIBROMA OF THE UTERUS.

This rare specimen was from a woman whose uterus was removed for procidentia. Upon splitting open the uterus a growth the size of a small orange was seen springing from the fundus. It was thought to be a submucous fibroid, but microscopic examination showed it to be a lipofibroma. This is an exceedingly rare uterine tumor, not more than six or eight cases having been reported in the literature. On account of its rarity, the case will be reported at length later on.

DR. PALMER FINDLAY.—I would like to ask Dr. Peterson whether the diagnosis of fibro-lipoma was made from the microscopic section. All I can see is fibrous tissue with empty spaces.

DR. PETERSON also presented the histories of

THREE NEPHRECTOMIES.¹

DR. A. GOLDSPOHN.—With regard to the cystic kidney, I would like to ask Dr. Peterson whether he inflated the colon in making the diagnosis, and if he did so where did he find the ascending colon to be located with reference to the tumor. Was it laterally or towards the median line or on top of it. According to the rules with reference to that method of examination the ascending colon should have been found either on top or toward the median line of the tumor, and it would be a matter of interest, in case this inflation of the colon was done, to know where it was found. It would show how true this particular test in diagnosis is. This inflation of the colon to determine the

¹See original article, page 318.

origin of tumors, whether from the pelvis or elsewhere, is quite a valuable method.

DR. JOS. B. DELEE reported

TWO CASES OF "CÆSAREAN SECTION."

CASE I.—This patient's history has already become familiar to the Society, as the obstetric events of her life have been regularly reported to it. Her first labor occurred in January, 1899, in the service of the Chicago Lying-in Hospital. After many hours of strong uterine action, the head failed to engage. A generally contracted, flat, rachitic pelvis was diagnosed and the patient removed to Wesley Hospital for symphysiotomy. The child was found in such a precarious condition, however, that the graver operation was not considered justifiable, and after a "conscience high forceps trial," craniotomy was performed. The delivery of even the mutilated infant was very laborious.

The second pregnancy was terminated by Cæsarean section, at term, at the Chicago Lying-in Hospital. The conservative operation was performed, the Fritch fundal uterine incision being made. A full account of these labors was published in 1901, in the *American Journal of Obstetrics*.

The patient recovered promptly from the operation, but several months later a piece of silk was discharged, leaving a sinus in the abdominal wound. Dr. Schroeder removed some silk from the upper part of the wound, but the sinus did not close for six months till the discharge of a knot occurred. During this period the patient aborted spontaneously, at about the third month of pregnancy. In the summer of 1903 the patient appeared again, being in the sixth month of her fourth pregnancy.

She was apprised of the necessity of another abdominal delivery, to which she agreed with the stipulation that she be not rendered sterile. The pregnancy lasted three weeks beyond the anticipated date of labor. The child was large. Examination of the pelvis gave the following measurements: Spines, 27.5; crests, 28; bi-trochanteric, 30; Baudelocque, 17.5; C. D., 10.1; bi-ischiatic, 5.5; extosis on posterior surface of pubis, .5 cm. high; C. V., 7.5 to 8 cm. These measurements were the same as those previously taken, and they have been repeatedly verified.

Labor began September 21, early in the morning. The operation was performed about 9 A.M. An umbilical hernia which the patient had had for years and which contained omentum, was first taken care of. The incision was made parallel, and to the right of the old scar, the uterus delivered and then the omentum separated from the uterus to which it was adherent. Fearing this dissection was taking too much time, the uterus was incised, again after Fritch's method. The placenta was on the anterior wall and its border fell in the line of incision. The child and the placenta came out at once through the opening made. Hemorrhage was quite profuse, and ceased only on the completion of the first row of uterine sutures, which was made continuous in

order to save time. This suture was of catgut. A row of silk interrupted sutures and a peritoneal suture of catgut were now placed. The omentum adherent to the uterus and abdominal wall was bound off, and the umbilicus with the hernial sac was excised. The abdomen was then closed as usual, in three layers.

The patient left the table in good condition, but developed, within sixteen hours, symptoms of ileus—vomiting, obstipation, extreme tympany, collapse, with pulse 132 and respirations 60 per minute. The extreme tight abdominal binder was loosened and the symptoms subsided at once, the bowels moving within thirty minutes.

The child was a male and weighed 9 pounds 5 ounces. Both patients left the hospital in 18 days in good condition.

CASE II.—In this case the indication for the Cæsarean section was not so classic,—but to all who examined the woman, existed beyond question.

Mrs. R., age 30, iii-para. Her first labor lasted two days and was terminated by forceps, a living child being delivered. The second labor likewise lasted two days, again was terminated by forceps, but the child died in a few hours of a pneumonia (?). Both children were said to be immense, the latter weighing 17 pounds(?). The patient has not been well for years, suffering with her bladder and kidneys. At present there are evidences of nephritis. The woman's size is immense—she weighs at least 300 pounds. When seated, the abdominal tumor projects six inches beyond the knees. The abdomen is enormously distended, there is a fatty tumor in it fully eight inches thick, above the pubis. Abdominal palpation is negative; it is impossible to take pelvic measurements. The legs are edematous and the vulva is buried in rolls of fat and edema so that it is impossible to reach the introitus by an ordinary examination. The pudenda and neighboring regions are covered with scales, there being a marked eczema intertrigo extending well down the thighs and up on the abdomen.

The patient entered Mercy Hospital on the 3d of October, 1903. Labor began at 6 A.M. of the same day, the pains being regular and strong from the start. Dilatation was complete at 11 A.M. At 1:30 P.M. the membranes ruptured. Examination with the whole hand showed breech presentation S.L.A., and in order to facilitate delivery, one leg was brought down. The leg was so large that it filled the pelvis, and gave the impression of a child whose weight could be no less than 16 pounds. The head was near the liver. Labor went on for three hours, but no progress was noted in spite of strong pains.

The indication now arose for artificial delivery, but the question, how, was not so easily answered. Since the child was so large and the patient so fat, I considered the dangers of an abdominal delivery not greater than those of a tedious dissection from below, through an infected passage of 5 inches before reaching even the vulva. Dr. T. J. Watkins coincided with me. Dr.

C. S. Bacon, although he found the c.v. to be $9\frac{1}{2}$ cm., said that he would adopt the abdominal delivery only in the interests of the child. Even if the patient had been thin, I would have selected the abdominal operation as the one of choice, because of the immense child and because I felt sure that it would be impossible to extract the fetus alive through the pelvis.

Operation was begun at 5:30 P.M., ether being the anesthetic. The patient remained on the broad wooden table on which she had been lying since 1 o'clock, as the operating table was too high and too narrow. The infant's leg which had been brought down, was carefully disinfected and covered with a wet antiseptic towel, to prepare it for its passage through the uterus and abdomen. I began the incision higher than usual, to avoid the immense lipoma of the lower abdominal wall. Over the epigastrium the fat was one inch thick; I prolonged the incision downward till the fat was three inches thick. The uterus was delivered through the abdominal wall and a large roll of gauze placed behind it. The uterus was opened by the anterior median incision, which went through the placenta.

The hemorrhage was not marked. I delivered the child by the head, clamped and cut the cord and handed the infant to Dr. Bacon. It cried at once, and vigorously.

The uterus was closed by three rows of catgut sutures, and three rows of sutures were placed in the belly wall—two of catgut, one of silkworm gut. No drainage. There was little hemorrhage and the uterus contracted well under stimulation with hot wet towels.

The patient left the table in good condition, and, though she had some fever which we could not localize, she made a good recovery.

The infant cried vigorously for a few minutes, then began to grunt with each expiration. It soon developed high fever—103 to 106, with respirations 120, and died in sixteen hours, under the clinical picture of a pneumonia, though this diagnosis could not be made. No autopsy was allowed, and the only record I have of the infant is a skiagraph, and the measurements. The child weighed 14 pounds on a tested scale; it was $57\frac{1}{2}$ cm. long. The development of the legs and trunk was out of proportion to that of the head and shoulders. The hips and legs were those of a well fed child three months old. The head measurements were,—biparietal, 9.8; bitemporal, 9; sub-occipito-bregmatic, 9.5; occipito-frontal, 12.5; occipito-mental, 13.5; circumferences, 34 and 37 cm. The bi-acromial diameter was 15.5, the circumference 46 cm. The bisiliac diameter was 10, the circumference 37 cm. The chest was 39 cm. The head was completely ossified, the fontanelles were almost closed. The child appeared slightly edematous.

DR. CHAS. E. PADDOCK.—I would like to ask Dr. DeLee whether he has used the Fritsch incision in subsequent cases and why he used it the second time in this case? I can see no ad-

vantage of the transverse incision over the longitudinal one. In fact, if you are to open the uterus in situ, you are required to make a longer incision in the abdominal wall. Was the omentum in the first case carried behind the uterus or anterior to it? I am glad to have him acknowledge that he was unable to make a positive measurement of the pelvis, because I have always understood that he found no trouble in accurately measuring every pelvis. In this case he introduced the whole hand into the vagina and it would seem that the length of the true conjugate could have been ascertained.

The fetal mortality in Cæsarean section is nothing compared to the fetal mortality in high forceps operation, and it would seem to me that the Cæsarean section should be done more frequently, especially when we are in doubt.

Again, the average practitioner is better prepared to do a laparotomy than a high forceps operation. He is more skilled in the technique of a surgical operation than he is in the application of the forceps upon the head high in the pelvis.

DR. GUSTAV KOLISCHER.—I have seen the Fritsch incision done several times and I am of the same opinion as Dr. DeLee. It has always seemed to me that the uterus does not retract as readily as when a longitudinal incision is made. Nor can I see any indication for making a Fritsch incision unless the operator wishes to sterilize the woman by burying the stumps of the resected tubes, an operation first done by Richard Braun.

So far as the indications in the second case are concerned, it is hard to theorize afterwards because obstetrical indications are always indicated by the emergency. It is a fact, however, and I remember one case very well, that it might be absolutely impossible to operate through the vagina with instruments because of the obesity of the patient. I remember a patient with vesico-vaginal fistula on which Schauta wanted to operate: It was absolutely impossible to make even a satisfactory examination until we had some instruments made to order in order to get a speculum large enough to overcome the thickness of fat. In such a case it would be impossible to make pelvic measurements.

There is one feature that is very gratifying to me, and that is, that it proves that it is very difficult, and sometimes almost impossible, to make a fair estimate of the size of the child in relation to the pelvis, a point hotly contested in medical societies recently.

So far as a choice between a high forceps operation and a Cæsarean section is concerned, I want to say that in most cases the death of the child during delivery with the high forceps is due to the fact that the forceps are applied at a time when they should not be applied. It is the practice among certain practitioners to apply the forceps to the floating head and drag it through the pelvis. That is wrong practice and it should be condemned. The high forceps should never be applied until the head has engaged. Sometimes a man will succeed in catching the head

and dragging it down through the pelvis. That is a trick or stunt but no method.

The other factor is this: So far as I have seen, and comparing the results of those operators who have the best results, the latter do not use the French traction forceps because with these they are in condition to exert an immense force, greater force than is compatible with the well being of the baby. I cannot admit that there is a choice between Cæsarean section and the high forceps operation. If the conditions are present for the application of the forceps there is no reason for performing a Cæsarean section. We must discern between conditions and indications and not attempt to muddle things. That is the curse of so many obstetricians.

DR. CHAS. S. BACON.—I do not know that it is necessary to add anything to the description of the second case. The result bore out the wisdom of the Cæsarean section. I do not believe that any of us who saw the child felt that it could have been pulled through alive. Although the child did not live afterwards, yet a living child was delivered and to us that was a justification of the operation.

DR. DELEE, closing the discussion.—In reply to Dr. Paddock regarding the determination of the conjugata diagonalis, perhaps, I should have determined it more accurately. I did determine, however, that the pelvis was slightly contracted. Dr. Bacon made a fairly accurate estimate of the conjugata diagonalis and put it down at 11 giving a c.v. of $9\frac{1}{2}$. The woman gave a history that she had always borne immense children and I concluded from that that the pelvis was large enough for the passage of an ordinary sized child.

Regarding the Fritsch incision, I am not going to practice in any more. I have used it in two of seven cases but fail to find that it has any advantages over the older incision. The adhesions of the omentum occur just as much with that incision as with any other. The delivery of the child was not convenient. In both cases the child popped out before we were ready for it. The hemorrhage was much greater in these two than in the other five cases. The difficulty of sewing it up was just as great, in fact, I think it was greater, and more stitches were necessary than in the anterior median incision. And the placenta was cut into just as frequently, so that there was no advantage in that. As Dr. Kolischer said, the incision might be of advantage when you want to bury the tubes in the corners,—one might bury them where incision is made from tube to tube, but it is difficult to make that incision because the uterus expands irregularly and in some cases an arched incision would have to be made in order to reach the two tubes. So that the advantage would after all be a very small one.

In the first operation I brought the omentum down behind the uterus and left it there. In the other operations I always brought the omentum down in front as I did not see any particular ad-

vantage in bringing it down behind the uterus. In fact, if it was to become adherent I would rather have it in front than behind.

Regarding the high forceps, I hardly need answer that as Dr. Kolischer has answered it according to my views.

DR. CHAS. E. PADDOCK.—Dr. DeLee says that he always brings the omentum over the uterus. If there should be any infection of the uterine stitches, is it not more liable to extend to the peritoneal cavity between the omentum and the uterus than it would be if the uterine incision came in contact with the abdomen, with a probable exit of the infection through the abdominal incision? As a rule, these cases are emergency ones and are more liable to infection from the fact that our field of operation has not been properly prepared and if anything can be done towards keeping this infection out of the peritoneal cavity we should do it. The question is, which is the proper procedure?

DR. DELEE.—Experience is better than theory. In the first place, if there is going to be any infection of the uterine stitches, I will agree that it is easier for it to go through anterior abdominal wall if the uterus is adherent to the anterior wall. In the case where I did bring the omentum down behind the uterus it later was found adherent to the anterior wall showing that it got there finally. Furthermore, the number of cases where the uterus is adherent to the anterior wall after Cæsarean section is very large; in fact, it is the rule, showing that the position of the omentum cuts little figure. I know that the practice is to bring the omentum down in front of the uterus and if that were going to prevent the uterus from adhering to the abdominal wall, it seems to me it ought to do so more often than it does.

DR. HENRY F. LEWIS read a paper on and exhibited a specimen of

PLACENTA DUPLEX.¹

DR. GUSTAV KOLISCHER contributed a paper entitled

HEMORRHAGE FROM THE BLADDER AND URETHRA.

The old idea that hemorrhage from the bladder points to the existence of a tumor is wrong. I have shown that hemorrhages from the bladder and urethra frequently originate from other causes than tumors. Vesical hemorrhages in the male most often have their origin in the prostate and not in a tumor of the bladder. Ulcers of the bladder and certain kinds of cystitis may lead to a very profuse hemorrhage. The conditions that I want to report are the following:

First, the bladder. In a number of cases we find that when we introduce a catheter we always can draw off blood even after the bladder is empty. If you introduce a foreign body into the normal female bladder it will react. The bladder continues to contract and strikes the catheter with a thud that sometimes leads

¹See original article, p. 200.

to the diagnosis of stone. On cystoscopic examination we find a slight cystitis, and the bladder mucosa is covered with phosphates which have never formed any concretions. They are small globuli of phosphates; only amorphous phosphates. I am quite convinced that the hemorrhages in such a case are due to traumatism, because if we clean out such a bladder and if we continue the treatment, the hemorrhages cease entirely. When we cystoscope such a bladder there are no more patches of submucous hemorrhage.

The therapy is very difficult because everything depends on whether we are able to stop the formation of phosphates, a very difficult task. We face the same problem as to why calculus is formed in the bladder. Theories are not very satisfactory, each being overthrown by some later finding, conditions never being alike in any two cases. Sometimes we succeed in curing a case by administering acids, but usually we are helpless and can furnish only temporary relief by flushing the bladder.

Another condition that I have observed is a peculiar condition of the trigone. The mucosa is smooth, white in color and shows no wrinkling or folding. In all these cases the gloss of the mucosa has disappeared. The trigonum resembles a piece of velvet; it is red and bleeds profusely. I saw a hemorrhage in one case that necessitated section. The bladder was filled with firmly coagulated blood and it could not be emptied.

These cases can be cured by scraping the trigonum of the bladder and cauterizing afterwards. I operated one such case successfully and Dr. Louis Schmidt operated another, also successfully.

Two other conditions that lead to quite profuse hemorrhages from the female genital organs are granulations in the urethra; infectious and noninfectious granulations. Eight years ago I described granulations which regularly appeared on top of fissures in urethræ infected by gonorrhea. Neugebauer found gonococci. A few years afterward several other observers described the same condition. We see these granulations not only on fissures but also quite frequently in that part of the urethra that borders the trigonum. The hemorrhages may be quite profuse. In the male an interesting symptom is to be seen. We know that in the posterior urethra the blood flows down into the bladder because the posterior prostatic sphincter is not as strong as the anterior. In woman the main strength of the closing apparatus is in the posterior part and hence she will bleed at the external orifice. If we examine with the cystoscope we find that the mucosa is transformed into a granular mass and there is profuse bleeding and the field becomes dark and red. If we make an endoscopic examination we see that in the center there is nothing to be seen but dark granulations which bleed excessively. The only way to demonstrate them is to touch them up with adrenalin when for a few minutes there is not much bleeding.

I tried different remedies but found only one that was uniformly successful. That is to scrape off all the granulations with a small

curette and to cauterize afterwards, not with silver nitrate which will produce a scar and lead to hemorrhage, and is painful. It is sufficient to touch up the granulations with iodoglycerin. That is one of the very few indications for the use of the endoscope for therapeutic purposes. In most other conditions we succeed without the use of this instrument. If it is applied repeatedly it makes the patient very nervous and may cause hysteria, but in these cases it should be used and one application will suffice.

Another condition of hemorrhage is that which follows traumatic stricture. I have three cases on record where a traumatic stricture was produced by rupture of the urethra during delivery with forceps. Strictures of the female urethra are more common than is usually supposed but they are often overlooked. In all these strictures there are granulations back of the stricture and that is why they are overlooked during the treatment of the stricture. If a more severe hemorrhage follows we presume that a false passage was made, but that is not necessarily the case. Usually the hemorrhage is due to a traumatism of the granulations and it is surprising what an amount of blood may be shed in a short time. If we dilate the stricture we do not cure the granulations. In all these cases after dilating the stricture we must scrape the granulations and then cauterize. I had some of this tissue examined by a pathologist but only granulation tissue was found.

I call special attention to these cases because they are rather frequent and it is important to make a correct diagnosis if the treatment is to be effective. All these conditions can be diagnosed easily either with the cystoscope or the urethroscope. It is a frequent occurrence that the woman is treated for a long time for cystitis when cystoscopic examination would fail to reveal a cystitis. I know of one case operated in this city for cystitis. When she was operated again she had a pyelitis and a large effusion in the neighborhood of the kidney.

A woman does not pay so much attention to a hemorrhage from the genitals as does a man because she is used to seeing blood come from them, so that it is the duty of the physician to call attention to this and to examine every case of hemorrhage from the genitals very carefully. It is striking what quantities of blood are lost; sometimes the patient is exsanguinated. She loses flesh and weight. No one would think of treating a hemorrhage from the nose, mouth or rectum without endeavoring to determine the cause, but nearly everybody will treat these hemorrhages from the urethra without examining into the cause. A cystoscopic or endoscopic examination of a woman is as simple as ordinary catheterization. There is no traumatism or shock connected with the operation. The cystoscope should not be reserved for the use of a few men; it should be an instrument that is used generally by all surgeons and gynecologists.

DISCUSSION.

DR. J. CLARENCE WEBSTER.—I have had some cases like those reported by Dr. Kolischer and I think he has done well to emphasize the necessity for routine examination in bladder cases. I have seen some very interesting cases of urethral hemorrhage and in most of these it was not suspected that the hemorrhage might come from the urethra. In most of the English-American textbooks a paragraph is given to what is called "red patches" of the urethra. Of course, the term does not signify any pathology. One of the most interesting cases I had was that of a woman exsanguinated from a hemorrhage supposedly from the bladder, but the real condition was a large granulating mass in the urethra which I removed with the cautery. She recovered promptly. The woman was about three months pregnant at the time and did not abort.

I have also seen the condition of phosphatic deposits in the bladder in a number of cases. They caused profuse hemorrhage that was thought before cystoscopic examination to be due to malignant disease of the bladder or kidney. Removal of these deposits cured the cases. In one case I counted thirty deposits through the cystoscope.

I would like to call attention to the use of the monobasic acid sodium phosphate introduced about a year ago by Hutchinson of the London Hospital. He said that this was the best drug for producing acidity in the urine. I have been using it with success ever since his article appeared. It is particularly valuable in cases where urotropin is administered for its action in the urinary tract because urotropin acts best when the urine is acid and this drug will undoubtedly enable us to get better results from the administration of urotropin.

DR. A. BELCHAM KEYES.—A woman recently came to my office with what appeared to be a gonorrhea. There was so much pus that I made no further examination at the time, but I smeared several cover glasses with the pus and found a large number of very minute bacilli that looked much like influenza bacilli. They decolorized by Gram's stain. Cultures were made on blood serum but failed to grow. I submitted the slides and cultures to Dr. Gehrmann who agreed with me that it probably was a case of influenza. It was not possible to make another examination because the patient recovered too rapidly and lived too far away. An enormous swelling of the urethra was the only trouble that I could see after the pus was removed by douches. The urethra was ectropic, very red, and on urination pain was very severe. I mention this because what is frequently taken for gonorrhea is, perhaps, due to some other infection than gonorrhea, and other infections of the urethra are not worked out as thoroughly as they should be.

DR. KOLISCHER, closing the discussion.—I am very glad that Dr. Webster supported my views in the matter. So far as Dr. Keyes is concerned,—in the last few years it has been learned

that many discharges from the female urethra are not due to gonorrhea, but to some other infection. For many years we were blinded by gonorrhea and saw it in nearly every case of inflammation of the vagina and urethra. So far as I know influenzal inflammation of the urethra has not been described before.

RUDOLPH W. HOLMES,
Editor of the Society.

TRANSACTIONS OF THE SOUTHERN SURGICAL AND GYNECOLOGICAL ASSOCIATION.

*Sixteenth Annual Meeting, Held at Atlanta, Ga., December 15,
6, and 17, 93, under the Presidency of
DR. J. WESLEY BOVÉE,
of Washington, D. C.*

An Address of Welcome was delivered by Mayor EVAN P. HOWELL, which was responded to by DR. GEORGE BEN JOHNSTON.

DR. F. F. SIMPSON, Pittsburg, Pa., read a paper entitled

EARLY DIAGNOSIS OF CANCER OF THE UTERUS.

The author stated that the great body of the medical profession saw but a single case of cancer during the time they were treating hundreds of other afflictions, and naturally looked upon that malady as being relatively rare. As a malady, it was infrequent; but as a cause of death its frequency was appalling. Early in 1900 the author addressed a note to the health departments of American cities with an aggregate population of ten millions, requesting a tabulated statement of deaths from cancer and from all causes during each year of the preceding decade. Statistics showed that of every 14 people who reached the age of thirty, cancer would claim one as its victim. Bearing more directly upon the subject of cancer of the uterus, however, was the distressing fact that of every twenty-eight women who passed the age of thirty, one would be the victim of this disease. It was humiliating to reflect that probably more than 80 per cent. of these women perished without the question of a permanent cure ever having been seriously considered until long after the moment of success had gone. A review of the literature, and a critical comparison of results gotten in the early borderline and late hysterectomies done by Dr. Weber and himself, had convinced him that cancer of the uterus was not only curable, but that it

was easily possible to recognize it while still a local and hence a curable disease.

The essayist closed by saying that he believed the day was fast approaching when well-informed women of the cancer age would seek protection by regular quarterly examination. Early diagnosis would then be the rule in cancer of the uterus as it was in appendicitis to-day. He insisted in this connection, however, that no other decision entailed greater responsibility, demanded more discriminating observations, or required more logical and mature judgment, for error on one side subjected the patient to an unnecessary operation not devoid of danger, and, on the other, permitted the disease to advance to protracted torture and death.

DR. MAURICE H. RICHARDSON, Boston, Mass., read a paper on
NEOPLASMS, WHEREVER SITUATED, SHOULD, IF POSSIBLE, BE REMOVED, WHATEVER THEIR APPARENT NATURE.

He considered chiefly neoplasms of the breast and of the female pelvis. The reasons which justified the adoption of the title-rule in these regions would apply with certain exceptions to all parts of the body. These reasons, all of which were illustrated by specific cases in the author's own experience, were as follows:

1. The uncertainty of the diagnosis, even on the part of the most experienced and the most skilful, made palliative treatment hazardous, especially in the doubtful cases. Several instances were given in which the patient was not operated upon because the tumor was supposed to be benign when, in reality, it was malignant. The error cost the patient the favorable moment for operation. The impossibility of accurate diagnosis in even the most accessible regions of the body was emphasized. Breast tumors apparently benign had proved malignant. Breast tumors benign throughout their principal areas showed minute foci of malignancy. Breast tumors clearly benign had, after many years, developed a fatal malignancy. So in abdominal tumors, especially the pelvic tumors in women, the difficulties of diagnosis made the apparently benign cases especially dangerous. Many instances were given illustrating the difficulties of diagnosis and the necessity for exploration in even the most favorable cases of presumably benign growths.

2. The dangers of benign tumors becoming in time malignant was emphasized and illustrated by not a few cases in which after years of slow and harmless growth a tumor had suddenly developed evidence of malignancy. Tumors of the breast, of the gall-bladder, the stomach, the uterus, the ovary, and of other regions had by an acquired malignancy convinced the speaker that the only safe rule of treatment was in all cases thorough extirpation of the tumor as early as possible.

3. The wisdom of exploration in certain apparently hopeless tu-

mors was illustrated by cases in which a benign and easily remediable condition was found, and in which impending death was averted by a safe operation. In this class were infiltrating tumors of the abdominal wall supposed to be hopelessly malignant, but which proved to be tuberculosis of the muscle aponeurosis; epigastric tumors, apparently cancerous, found to be pancreatic cysts, actinomycosis, chronic pancreatitis, and the like; pelvic tumors, supposed to be malignant and inoperable were proved to be old tubal inflammations, fibroids, ovarian cysts, and the like.

4. The essential malignancy of certain areas, especially the breast and the ovaries, was especially emphasized. In these regions the tendency of tumors to become malignant made the application of this rule practically imperative. Ovarian tumors, even when apparently benign, were shown to have especially dangerous tendencies to malignant degeneration.

5. In pelvic tumors especially, the benign often masked the malignant. Cases were reported to illustrate the obscurity of a uterine sarcoma by an overlying fibroid. In two recent cases cancer of the ovary was found concealed by an enormous fibroid, and in a third there was found an annular stricture of the sigmoid flexure.

The rule of universal extirpation had numerous exceptions. It should not apply to superficial tumors, clearly benign, which could not be removed without great disfigurement; keloids that could not be removed without leaving a broad scar, unless they showed a tendency to ulceration and malignancy; all other benign tumors, whenever their removal was dangerous, or whenever the patient's general condition was unfavorable, and tumors of all kinds in which the dangers and sufferings of removal outweighed the dangers and sufferings from the tumors themselves.

DR. J. GARLAND SHERRILL, Louisville, Ky., contributed a paper on

INTESTINAL CANCER.

He said that the treatment was to be largely determined by the extent of the involvement. Resection of the intestine and extirpation of the growth offered the patient the only hope of a cure, and this chance, though slight, should be given the patient whenever practicable, as early in the course of the disease as possible. Any of the classic methods might be employed.

The author reported two cases, one of which occurred in a woman, 26, who gave a history of repeated attacks of what was thought to be appendicitis. She was operated upon February 17, 1903. At that time she presented a painful tender mass in the right iliac region, accompanied by nausea, fever, and a rapid pulse. The abdominal wall was quite rigid. Upon opening the abdomen, the mass was found to consist of the cecum and ascending colon, which were matted together on their outer side. The peritoneum over the mass was thickened and the tissues around showed evidences of inflammatory changes. The mesenteric glands were enlarged. Posteriorly a small abscess was found communicating with

the lumen of the gut through a fistulous tract which had formed as a result of the ulceration of the neoplasm. The growth extended through the wall of the cecum and colon, firmly uniting them. It appeared inside of the intestine as an irregular elevation about two inches in diameter, and quite firm in consistency. The small gut was not involved. The appendix was normal, and no other growth was discovered in the abdomen. A resection was done by end to end suture. The dilatation of the ileum made the procedure comparatively easy. The patient rallied poorly and died eighteen hours later from exhaustion due to shock and sepsis.

A microscopic examination showed the growth to be an adenocarcinoma. The mesenteric glands presented evidences of inflammation, but were free from malignant involvement.

DR. HENRY T. BYFORD, Chicago, Ill., followed with a paper entitled

SPURIOUS DYSMENORRHEA.

The author made a plea for a more rational treatment of dysmenorrhea. After naming twenty-five varieties that are mentioned in the text-books, he called attention to their disappearance therefrom. Many supposed cases were spurious in character. These had been perpetuated by the physician and cured by the quack. The absurdity of the nasal cure was emphasized, and the cures referred to as spurious. Instances of menstruation in the male were quoted. The trend of the paper was to condemn writers for bringing the symptom into the foreground, when it should be kept in the background, and for wasting their own time and that of their readers in ridiculous refinements and speculations.

SURGERY OF URINARY TUBERCULOSIS IN WOMEN.

DR. GUY L. HUNNER, Baltimore, Md., reported 35 cases occurring in the services of Dr. Howard A. Kelly and his associates in Baltimore. These patients were all women with an average age at the onset of symptoms of twenty-eight years. The disease was unilateral in 31 of the cases, and it was probably primary in the kidney, as regards the urinary system, in 30 or more of the cases. Thirty-one cases had bladder symptoms at some time in the course of the disease, although only 18 cases had bladder lesions at the time of operation. Eleven of these 18 cases still had some bladder symptoms and 5 were known to have bladder lesions, although 9 of the 11 had had systematic bladder treatment.

Tuberculosis of the bladder did not heal with the ordinary methods of treatment, and if the disease persisted a year and did not occupy more than half of the bladder, it should be excised. Of 22 ureters examined microscopically, 17 showed tuberculosis, while 5 were chronically inflamed. If a tuberculous ureter remained either in part or *in toto*, the wound usually remained open at least two years, while the removal of the ureter with the kidney resulted in rapid closure of the wounds. Five cases died, three after six and eleven weeks, and two years, respectively, from involvement of the other kidney, and two, in fifteen and six days, because of

the operation. Sixty-six per cent. of the patients were enjoying fairly good or excellent health.

THE PROGRESS OF URETERAL SURGERY.

DR. J. WESLEY BOVÉE, Washington, D. C., President of the Association, selected this title for his Presidential Address.

After referring to the deaths of Drs. W. E. B. Davis, Geo. J. Engelmann, and J. McFadden Gaston, he spoke on the surgery of the ureter, giving its history and present status.

The treatment of ureteral calculi first claimed attention since the diagnosis and treatment of this condition were very much studied at the present time. The employment of the X-ray was the simplest procedure known for purposes of diagnosis, and were it accessible at all times, and completely reliable, no other method would be comparatively valuable. Unfortunately, such conditions as calculous anuria might render a patient in a secluded place so ill that this method of investigation was necessarily precluded. Moreover, calculi might be of sufficient size to block the ureter and give no shadow in the radiograph. For this reason, especially, other plans of examination should be employed, although the necessity of constant manipulation of the ureter was a *sine qua non* to dexterity in treating other conditions of this structure. Palpation would ever have its important position. Exploration was an important method in such investigations. Tubular calculi might escape discovery by this plan. The wax-tipped bougie, suggested and used by Kelly, was especially sensitive, and no doubt if it touched a calculus it would receive a telltale impression.

In the treatment of ureteral calculi the proper plan was extraperitoneal ureterolithotomy, as infected urine was usually associated with this condition, and easily produced peritonitis, if permitted to come in contact with the peritoneum. If pus was not present, the establishment of uretero-cutaneous fistula would seldom be necessary, though careful drainage of the wound would be advisable. This rule applied to every part of the duct. He was firmly convinced the ureteral wound should be made longitudinally whenever possible, and sutured after lithotomy. If much necrosis of the ureter was manifest, as had often resulted from the impaction of a calculus, each case should be treated according to the judgment of the surgeon, and such modifications as resection or excision, with uretero-ureteral anastomosis or uretero-cystostomy might rarely be required. Frequently pyonephrosis accompanied calculous ureteritis. Incision and drainage, and probably nephrolithotomy would be needed in addition. The routes employed depended upon the location of the calculus, the bladder, vagina, or loin being selected. He could only endorse the rectal route, as employed by Ceci, when examination revealed a calculus ulcerating into the rectum or threatening to do so.

For ureteral fistula nothing need be done unless obstruction of the duct below the fistulous opening existed. In such a case the caliber of the canal must be restored. Usually the fistula would

then close spontaneously, although so much cicatricial tissue might be deposited about the opening as to prevent closure. Suture or perhaps resection might be required in that case.

DR. BOVÉE referred to subcutaneous injury of the ureter, saying that no treatment was advisable unless evidence of extravasation of urine or of ureteral obstruction existed.

For partial division of the ureter, suturing should be applicable. Abnormal ureteral terminations of congenital origin might be corrected by uretero-cystostomy, usually by the vaginal route. Fortunately, in these cases the ureter was abnormally long, and therefore the difficulty was much less than was the same operation for other indications.

The ureter might be removed in whole or in part for tumors, tuberculosis and malignant disease. In 1899 he was able to collect from literature about twenty-four cases of partial or complete ureterectomy. Now the number had increased to nearly one hundred.

In complete ureterectomy or nephroureterectomy in women, probably the loin and vaginal incisions constituted the best plan. In the author's last case he separated the lower two inches through a vaginal incision, and then separated and withdrew the kidney and ureter by the loin route. This he believed to be the best of all.

For ureteritis the treatment had been largely of irrigation and topical applications. He had been disappointed in this work and had grave doubts of its being the best. Probably the violence done to the lower part of the ureter by this instrumentation counterbalanced the benefits. He had had a few cases of trigonitis that had come to him after ureteral irrigations were said to have been made. He had, in consequence, been led to speculate as to whether a non-alcoholic, non-nitrogenous diet, with diuretics and rest in bed, might not be superior treatment for simple ureteritis.

DR. C. N. CHAVIGNY, New Orleans, La., discussed the subject of

PUS COLLECTIONS IN THE PELVIS.

and reported three cases.

DR. J. RIDDLE GOFFE, New York, read a paper on the

TECHNIC OF THE VAGINAL METHOD.

In his own hands the scope of the operation—namely, the conditions to which it was applicable, was steadily widening. The vaginal method was no longer confined, on the one hand, to simple puncture and drainage, nor limited, on the other, to the radical operation of hysterectomy. All the intermediate procedures that were called for by the multifarious conditions found in a woman's pelvis found their most direct route through the vagina.

There were two vaginal incisions through which the pelvic cavity could be reached; one, posterior to the cervix into Douglas' pouch, and the other anterior to the cervix, separating the bladder from the uterus and opening up to view and touch the entire con-

tents of the pelvis. The latter was the one which afforded the greater facilities for operative procedures, and the one which he depended upon almost exclusively. The posterior incision was frequently used in connection with it, to afford additional opportunity for the purpose simply of securing drainage and in some cases for manipulation. The method lent itself to every form of conservative work upon the uterus and its appendages.

DR. GEORGE BEN JOHNSTON, Richmond, Va., reported a case of

BILATERAL DIFFUSE VIRGINAL HYPERTROPHY OF THE BREASTS.

The patient was a white girl, virgin, aged 16, four feet, ten inches tall, weighing 112 pounds. The breasts hung from the chest wall at about the fourth rib and reached to a point just above the symphysis pubis. The nipple was flattened and stretched. The substance was soft and of similar consistence to that of a well-nourished multipara's breast; the glandular masses scattered throughout were distinctly palpable. The breasts were almost symmetrical, with the exception of a lobular division at the base of the left breast of the same general structure as the main tumor. Two small scars near the right nipple indicated the site of former abscesses. The antero-posterior circumference of the left breast was $19\frac{1}{4}$ inches; the antero-posterior circumference of the right breast was $21\frac{1}{4}$ inches; the superior inferior circumference of the left breast was 32 inches, and of the right, 31 inches.

Operation was performed under ether anesthesia, and occupied thirty-five minutes. The left breast was removed first, followed immediately by the right. The breast was held above the field of operation, and the amputation carried on as rapidly as the vessels could be caught by assistants. Healing was by primary intention, and the patient was up and about in six days.

DR. GEORGE H. NOBLE, Atlanta, Ga., reported a case of

EXCISION OF THE PSOAS MAGNUS MUSCLE FOR SARCOMA.

DR. BARTON COOKE HIRST, Philadelphia, Pa., read a paper on
THE DIFFERENTIAL DIAGNOSIS OF SYPHILIS AND CANCER OF THE VULVA.

After referring briefly to the differential diagnosis of these two affections, the author reported the case of a woman, 28 years of age, single, who had never been pregnant. She denied ever having led an immoral life, and the possibility of venereal infection. Ten years ago she was operated on in the Pennsylvania Hospital for hemorrhoids and fissure in ano. The wound of the operation did not heal properly. More than a year ago the patient noticed an ulcerated condition of the vulva, and a short time afterward incontinence of feces, followed soon by incontinence of urine. For two years past there had been amenorrhea. On making a specular and digital examination a fistula between the fossa navicularis and the rectum was discovered. The whole urethra was gone. There were three little tubercles at the neck of the bladder, these being all that

was left of the urethra. The vagina above the neck of the bladder was perfectly healthy. The cervix was normal, except that it was atrophic, as was the whole uterus. The case, at first sight, looked like an inoperable epithelioma of the vulva. It was pronounced to be so by one of the most experienced dermatologists in Philadelphia, to whom it was shown. But there was none of that extensive infiltration and elevation of the skin surface around the edges of the ulceration, such as was seen in an example of extensive epithelioma of the vulva, considerably advanced, but not yet inoperable. Moreover, numerous pieces of tissue from different places in the ulcerated area showed nothing characteristic of cancer. There was everywhere the most extensive round-cell infiltration and necrosis of tissue. The microscopic study, as well as the macroscopic appearance, suggested syphilis in the ulcerated gummatous form, as the most likely possibility, epithelioma being excluded. Accordingly, the patient was put on specific treatment in spite of her negative history, and the entire absence anywhere upon her body of signs indicating an old syphilitic infection. The treatment was given up within a week, as the patient was severely pyralized and could not endure large doses of potassium iodide. Lupus next suggested itself. On two separate occasions, under anesthesia, twelve or fifteen pieces of diseased tissue were removed for microscopical examination. No tubercles nor bacilli could be discovered anywhere. Inoculations in animals were negative. The urine contained no tubercle bacilli. The bladder itself was healthy. There was a response to the tuberculin test, but the woman had a patch of consolidation in the apex of one lung. Meanwhile the patient was given X-ray treatments every other day for eight to ten minutes. Within three weeks the external ulceration was healed. The local appearance at that time showed great improvement. Two weeks later the recto-vaginal fistula spontaneously closed under the continuance of the X-ray applications. Nothing remained of the original disease, except the absence of the urethra and an elephantiasic condition of the labia majora. The former had been corrected by urethroplasty. He had not yet joined the new urethra to the opening in the bladder, so that the establishment of continence of urine was still doubtful, but he was quite hopeful of making the patient eventually entirely comfortable.

DR. J. M. BALDY, Philadelphia, Pa., read a paper on

APPENDICITIS AND ITS RELATION TO PELVIC INFLAMMATIONS.

He stated that both pelvic inflammatory disease and appendicitis were infectious in origin. In the case of pelvic inflammatory disease the source of the infection was from the uterus; in the case of appendicitis, it was from the interior of the vermiform appendix or the intestine.

He did not mean to deny that pelvic inflammatory disease might occur from traumatisms, nor that an appendicitis might arise from the same cause; but this was true so rarely that he wished to be understood as excluding such from present consideration, in order

that there might be a definite and common understanding as to the term pelvic inflammatory disease and appendicitis as applied to the relation of these conditions.

His experience had led him to differ with those gentlemen who held that appendicitis generated pelvic inflammatory disease, or that pelvic inflammatory disease caused appendicitis. The two diseases were rarely associated, and only then as a coincidence. He was firmly of the opinion that the one never caused the other.

In all his experience he had not seen a single case in which, having found pus in a Fallopian tube, he had found pus in the involved appendix; nor had he found a perforating or gangrenous appendix in such a case. On the other hand, where he had found a perforated or gangrenous vermiform appendix, or one which contained pus, either in its cavity or enclosed in its walls, he had never noticed pus in a Fallopian tube or ovary. Should he meet with such a condition, it would appear to him that the two diseases existed as a coincidence independent of each other, as far as direct infection from one to the other was concerned.

INTESTINAL OBSTRUCTION.

DR. W. H. DOUGHTY, Jr., Augusta, Ga., reported three cases of intestinal obstruction treated by resection, with recovery.

DR. T. J. CROFFORD, Memphis, Tenn., reported a case and exhibited a specimen of

EXTRA-UTERINE PREGNANCY.

The gestation sac was so thoroughly developed and so firm that it was enucleated without the loss of any blood. He had supposed the mass to be a parovarian cyst. After the specimen was removed and the patient put to bed, the sac was slit open and out came the fetus. The head of the cecum was found in front and adherent to the anterior abdominal wall. It was found necessary to remove the appendix in this case.

DR. J. HORACE WHITACRE, Cincinnati, Ohio, reported a

CASE OF COLLOID CARCINOMA OF THE RECTUM, WITH EXCISION BY THE COMBINED VAGINAL AND INGUINAL ROUTES.

The case presented unusual pathological and clinical features. After giving a complete history of it, and describing the operation, the author stated that his principal reason for presenting it was the unusual nature of the primary tumor. He had never before seen a carcinoma of the bowel which had developed as a hard, uniform thickening of the entire circumference of the tube. The tumor involved the wall of the rectum to almost a uniform degree for six inches of its length, and the organ was transferred into a tube that might very well be compared to a flattened lead pipe with very thick walls. The tube was very rigid and non-collapsible when in a fresh state.

A second point of interest was the strong naked eye resemblance to tuberculosis. The minute bodies which were scattered over the pelvic peritoneum could not be differentiated from miliary tu-

bercles. Large caseous lymph nodes were found in the hollow of the sacrum. The great predominance of fibrous tissue, the uniform involvement of a long segment of the bowel, and the appearance of minute nodules resembling miliary tubercles in the primary tumor of the rectum all spoke for hyperplastic tuberculosis of the bowel.

A third point was the very rapid development of the solidly carcinomatous ovarian tumor from half a dozen minute miliary metastases on the peritoneal surfaces of each. These tumors were friable and almost jelly-like, as were all of the metastases, whereas the original tumor was as hard as cartilage.

VAGINAL CYSTOTOMY FOR STONE IN THE BLADDER.

DR. CHARLES R. ROBINS, Richmond, Va., read a paper on this subject. He said the condition was infrequent, and that the literature on the subject was meagre.

He reported two cases in which the following technique was used: The vagina was retracted and a curved dressing forceps was introduced through the urethra with the point downward until it could be felt with the finger in the vagina. The blades were then separated and an incision made through which the finger could be introduced for exploration. The opening was then enlarged sufficiently to enable the extraction of the stone, the bladder irrigated, and the patient put back to bed without suture. Suitable medication, as indicated by the condition of the urine, was administered. The bladder was flushed out daily with boric acid solution by inserting a catheter through the urethra and distending the vaginal opening. This was continued until the urine became practically normal.

He concluded that vaginal cystotomy was the operation of choice in the majority of cases. If necessary, it could be done under cocaine anesthesia. It gave the best drainage if cystitis was present. The formation of a permanent fistula was unnecessary, as by dilating the opening daily the same result was accomplished. Union of the wound was prompt and occurred without suture. By using a large number of vulvar pads and frequent bathing, the patient could be kept in a comfortable condition as long as drainage was necessary. The danger of forming a permanent vesico-vaginal fistula was remote if the mucous membranes of the bladder and vagina were not sewed together, but daily opening of the incision was relied on for drainage. If a fistula did occur, its repair should be easy, as one had a linear incision to deal with and no destruction of tissue.

OFFICERS FOR THE ENSUING YEAR.

The following officers were elected: President, Dr. Floyd M. McRae, Atlanta Ga.; First Vice-President, Dr. Geo. S. Brown, Birmingham, Ala.; Second Vice-President, Dr. J. Shelton Horsley, Richmond, Va.; Treasurer, Dr. Chas. M. Rosser, Dallas, Texas; Secretary, Dr. W. D. Haggard, Nashville, Tenn.

Birmingham, Alabama, was selected as the place for holding the next annual meeting; time, Dec. 13, 14, and 15, 1904.

John D. S. Davis, Birmingham, was selected as the Chairman of the Committee of Arrangements.

The Council made a report that the former action of the Association in appropriating two thousand dollars to a memorial in Birmingham, consisting of a ward bearing the name of the Association in the City Hospital of Birmingham, be rescinded, and that in lieu thereof two thousand dollars be appropriated to the erection of a monument to the memory of Dr. W. E. B. Davis.

The report of the Council was adopted.

TRANSACTIONS OF THE OBSTETRICAL SOCIETY OF LONDON.

Meeting of December 2, 1903.

The President, EDWARD MALINS, M.D., in the Chair.

MR. MALCOLM and DR. HAMILTON BELL contributed a paper on a case of

HYDATIDIFORM MOLE, WITH BILATERAL CYSTIC DISEASE OF THE
OVARIES AND INVASION OF THE MUSCULAR WALL OF
THE UTERUS BY CHORIO-EPITHELIOMA,

the patient being quite well two years after removal of the parts.

The patient came under the care of Dr. Malcolm Mackintosh, of Clapham Common, on April 10, 1901. She had a rapidly enlarging uterus, from which there were free hemorrhages on April 9, 14, and 19. The patient asserted that if pregnant she must have conceived on February 17. Mr. Malcolm saw her in consultation on April 29, and she was admitted to the Samaritan Free Hospital on the 30th. The first diagnosis was that the patient had a soft, rapidly-growing fibroid tumor. Subsequently it was thought that the condition might be one of ordinary pregnancy. Dr. Hamilton Bell suggested that there might be a hydatidiform mole. Delivery of the uterine contents being imminent, on May 8 Dr. Bell, after a consultation, emptied and curetted the uterus, the fundus of which was above the navel. A large quantity of hydatidiform material was evacuated. The uterus was again curetted on May 12. On May 29 the conditions were unsatisfactory, and the diagnosis was uncertain. Mr. Malcolm opened the abdomen and removed two ovarian tumors, the right one having a twisted pedicle. The condition of the uterus did not seem normal, and it also was removed, the cervix being taken with it. The patient recovered, and has remained well.

PATHOLOGICAL ABSTRACT BY DR. CUTHBERT LOCKYER.

The pathological interest of this specimen lies, first, in the discovery of two metastatic deposits of chorio-epithelioma in the muscular wall of the uterus three weeks after the removal of a hydatidiform mole; secondly, in the concurrence of bilateral ovarian cysts and malignant vesicular disease of the chorion: thirdly, in the type of cystic ovarian disease. In regard to the latter point the question whether the cysts arose from corpora lutea has not yet been definitely settled. No lutein cells have been discovered in the walls of the few loculi examined, but it is the author's intention to extend this investigation to other loculi before excluding the possibility of corpora lutea being the source of origin of the cysts.

The literature bearing on the ætiology of vesicular mole is referred to, Marchand's view being that cystic ovarian disease may influence the development of the ovum, whilst Veit regards the endometrium as accountable for ovular degeneration, and Findlay disallows an ætiological association between ovarian degeneration and vesicular mole. Other instances where vesicular mole and chorio-epithelioma have been associated with bilateral or single ovarian cysts are mentioned, some of these cases being recorded in full. A bibliographical table will be found at the end of the paper.

DR. PETER HORROCKS congratulated Mr. Malcolm and all those concerned in the happy issue of their case, for there could be no doubt that this woman had been rescued from a very dangerous condition. There was one practical point, which stood out prominently during the reading of the paper, and that was the great superiority of the finger over the curette in the removal of a hydatid mole. With the finger one could gently scrape away the hydatids from the places where they were attached, instead of blindly scraping everywhere, as with a curette; secondly, one knew just how much pressure to use to set them loose, also one could carefully avoid going too deeply at those points, where the villi penetrated further than healthy chorionic villi, as they were apt to do, and lastly, it might have been possible, had the forefinger only been used, to have discovered the malignant disease in the wall of the uterus.

DR. HERBERT SPENCER hoped the authors would alter the title of the paper, so as to include the essential feature of the case—namely, the occurrence of chorio-epithelioma after hydatidiform mole in a patient with cystic disease of the ovaries. He agreed with Dr. Horrocks that curetting was a dangerous method of removing a mole, and it appeared possible from an examination of one of the specimens, that the growth had been insulated by the curette. He did not approve of Mr. Malcolm's intention to remove the uterus by the supravaginal amputation. Whatever views might be held as to the relative advantages of amputation and total hysterectomy in the case of fibroids, he thought that in suspected malignant disease, and especially in chorio-epithelioma (in which

growths were known to occur in the cervix), total hysterectomy should be performed.

MR. G. J. B. STEVENS, as a visitor, begged to thank the authors for their papers. Especially, he wished to do so, as there was a practical piece of information of much importance to men in general practice, and which could be obtained only by attendance at some such Society as this, as it formed no part of book-reading.

In the course of 37 years of practice, the few cases he had had to deal with were cleared out by the finger and ovum forceps. They happened before the curette was much talked about.

Having once got rid of the uterine contents, after-consequences or associated troubles scarcely entered his head.

Now, however, he should be careful to apply to the next case the knowledge imparted, and should look carefully for associated changes in the ovaries and uterus.

MRS. SCHARLIEB gave a short account of a case of vesicular mole, complicated with double multilocular ovarian cysts.

DR. BELL, in reply, said that this case, which was the first to come under his care after his appointment to the Samaritan Hospital, was one which had always seemed to him of very great clinical and pathological interest. The difficulties of diagnosis and treatment were very considerable. He wished particularly to refer to the question of curetting, the propriety of which had been questioned by both Dr. Horrocks and Dr. Spencer. He quite admitted that the use of the curette was not usually advisable in cases of hydatidiform mole, and in the only other two cases, which had come under his own care, he had been able to evacuate the uterus with the ovum forceps and the finger. This case, however, was exceptional. After removing the bulk of the tumor with the ovum forceps, he put in a finger to scrape away the rest. But it proved very tough, the hemorrhage was considerable, and the condition of the woman, bad before the operation began, was now very serious. It was under these circumstances that it was determined to use the flushing curette, which checked the hemorrhage, and was more expeditious. He, the speaker, recognized that there was some risk, but it appeared to him that it was a choice of risk, and that under the special circumstances of the case, he had made the right decision. Perhaps these special circumstances had not been made sufficiently plain in the paper, and it had appeared as if he advocated the use of the curette in all cases. This was not the case, and after the remarks of Dr. Horrocks and Dr. Spencer, he would probably hesitate still more in the future than he had done on this occasion.

MR. MALCOLM supported Dr. Bell's view that in this particular case, it was impossible to remove all the hydatidiform material with the finger. Indeed, it was thought that at the first operation all the disease was not removed by the curette. He also thought that it was not likely that the new growths could have been felt by digital examination, because they were so small and so deeply placed in the uterine muscle.

The suggestion that a wound made by the curette, might have allowed the disease to gain access to the tissues, might be correct, but it did not seem necessary to assume the existence of a wound, if a new growth were adherent to the interior of the uterus.

As regarded the removal of the body of the uterus first, and the cervix afterwards, it would have been better to remove both at once; but the removal of the body was undertaken rather as a precaution than on account of any definite disease diagnosed, and the cervix had always appeared healthy. When the suspicious parts were observed, it seemed desirable to remove the cervix also, and this was done.

DR. T. G. STEVENS gave a Lantern Demonstration on the
FATE OF THE OVUM AND GRAAFIAN FOLLICLE IN PREMENSTRUAL
AGES.

DR. EDEN wished to express the admiration he felt for the fine piece of work, which Dr. Stevens had laid before the Society that evening. The labor involved in the examination of 70 pairs of ovaries by serial section was enormous, and the author deserved the greatest credit for the time and patience which he had bestowed upon the work. The field covered by the research was entirely new, so far as his knowledge went, and Dr. Stevens could quite fairly claim the credit of being a pioneer. The most interesting part of the demonstration consisted in the method by which the ovum was disposed of in the contracting follicles. If Dr. Stevens' view was correct, the normal protective and nutritive functions of the cells of the membrana granulosa became suddenly suspended when the follicle had reached a certain stage of development, and destructive functions were exercised by the same cells instead. This reversal of the direction of physiological activity was, to say the least, very remarkable, and it had no analogue in any other part of the body. But he felt bound to say that he was not absolutely convinced that the destructive cells were really cells of the membrana granulosa. He thought it possible notwithstanding Dr. Stevens' arguments, that they might be leucocytes. The weak point in the author's case consisted in the fact that his material was all post-mortem material. No importance could, therefore, be rightly attached to the absence of signs of diapedesis; this was a vital process, and could not be studied in dead tissues. Further, he thought it possible that the staining reactions of the destructive cells might be entirely different, if they could be obtained in the living state. Perhaps Dr. Stevens could arrange to carry out a few central observations upon operation specimens, or even upon the ovaries of young mammals—monkeys by preference.

DR. PETER HORROCKS thought the paper was conceived in a scientific spirit, and that the address had been delivered in an admirable manner.

He asked if the slides as shown on the screen, represented not merely different degrees of development of the ovum, but also different ages of the children, from whom the ovaries had been

taken? Thus, was the fullest developed ovum from the oldest child, and the most immature from the youngest?

At present it seemed a very strange thing if Dr. Stevens' observations were correct, that the ovaries should develop ova up to a certain degree of maturity, and then develop cells to devour them. He thought it would be of great scientific value, and that it might throw fresh light upon the whole question, if Dr. Stevens would continue his researches into the condition of the ova developing in ovaries of girls right up to the full establishment of puberty.

DR. C. HUBERT ROBERTS added his testimony to that of other speakers as to the excellence of the paper, and especially the microscopical drawings, which Dr. Roberts from personal experience knew were very difficult to do.

Dr Roberts asked for further information with regard to the origin of the liquor folliculi; he did not think Dr. Stevens had made it at all clear as to what was the exact process of degeneration, which the cells of the membrana granulosa underwent, or if it was a degeneration at all.

As to the entrance of certain cells into the zona pellucida of the ovum itself, Dr. Roberts was inclined to think the cells depicted were rather of the nature of leucocytes than those of the membrana granulosa, and that the process resembled phagocytosis to a considerable degree.

As to the last section shown (the cystic ovaries of a child), Dr. Roberts regarded these cysts as rather pathological than physiological.

Dr. Roberts was well acquainted with such ovaries, and it was not very uncommon to find bilateral cystic disease of the ovaries in young children. Cystic disease is certainly a morbid condition, and there were several such specimens in the Royal College of Surgeons' Museum, one of which Dr. Roberts had drawn in his book on Gynecological Pathology.

DR. BLACKER thought that there were several difficulties in the way of accepting Dr. Stevens' views as to the part played by the cells of the membrana granulosa in the destruction of the ovum, and the phagocytic action he wished to assign to them. Nagel in his work on the ovum had held that the zona radiata was really a part of the innermost layer of the cells of the membrana granulosa. If this was so then the theory that the cells of the membrana granulosa burst through the zona radiata, and then invaded the ovum could hardly be correct. Further than this these cells were degenerating, and such cells did not as a rule take on such important functions as phagocytosis. He thought that the cells found lying within the ovum were probably more of the nature of cell inclusions.

DR. VICTOR BONNEY remarked that he was particularly interested in the light thrown by Dr. Stevens' researches on the fact of the Tunica Granulosa.

He thought that Dr. Stevens' specimens showed very clearly

that in premenstrual life the granulosa cells retrograded *pari passu* with the ovum, whilst in adult sexual life, they continued to grow after dehiscence of the follicle and formed the lutein layer of the corpus luteum.

He had examined Dr. Stevens' specimens attentively and could find in them nothing at all resembling a lutein layer.

Seeing that much recent work by various observers tended towards a conception, which allotted to the luteum layer the function of producing the internal secretion of the ovary, and seeing further that the most striking point of difference between the child's and adult's generative organs lay in the fact of the latter's possessing a corpus luteum, and the former not possessing it; he thought that Dr. Stevens' work suggested strongly that it was to the persistence and continued growth of the granulosa cells after the disappearance of the ovum from the follicle by dehiscence, that we owed that development of sexual characteristics, which marked puberty.

DR. VICTOR BONNEY showed a specimen of a myoma undergoing red degeneration. He had removed it, together with the uterus, from a patient aged 42.

The tumor had existed for some years without any symptoms, but during the last six months had increased in size and become very painful.

Microscopic sections of the tumor showed diffuse necrobiotic change with disappearance of nuclei and degeneration of the muscle fibres.

Dr Bonney pointed out that in the peculiarly rapid onset of symptoms after a long period of latency in the presence of well-marked fever, and in its macroscopical and microscopical structure it was an excellent example of this form of degeneration, to which the observations of Fairbairn and others had lately directed attention.

Meeting of January 6, 1904.

The President, EDWARD MALINS, M.D., in the Chair.

DR. HERBERT SPENCER read a paper on

FIBRO-MYOMA OF THE INTRA-ABDOMINAL PORTION OF THE ROUND
LIGAMENT OF THE UTERUS.

He recorded a case of fibro-myoma of the intra-abdominal portion of the round ligament weighing six pounds, removed by abdominal myomectomy from a virgin twenty-four years old, who remained well after five years. He also gave a short account of the thirteen cases previously published.

A consideration of the facts furnished by these fourteen cases showed that fibroids in this situation occurred usually in women over forty, the writer's case being the youngest (twenty-four) and Winckel's the oldest (seventy-six).

The tumors were more frequent on the right side than on the left (nine to five) : in one case they were found in both ligaments, in another two tumors existed on one ligament.

They might occur in virgins ; they did not tend to prevent pregnancy or to cause abortion. They did not influence menstruation, menorrhagia and dysmenorrhea were present being due to uterine fibroids, which were associated in half the cases.

The tumors were subject to lymphangiectasis and to myxomatous and calcareous degeneration, and might cause trouble after the menopause.

They varied in size (from that of a nut to twelve kilograms), and might be pedunculated or sessile, intraperitoneal or subperitoneal.

The pedicle might be the ligament itself, which was hypertrophied, or there might be a separate pedicle attaching the tumor to the ligament. Torsion of the pedicle might occur.

Special symptoms due to the tumor were often not marked, abdominal pain and stiffness, pain on walking, sacral pains, intestinal pains, and pressure on the bladder had been met with. In the writer's case the superficial abdominal reflex was much increased on the side of the tumor. Ascites was absent. The tumors, which varied in consistence, closely simulated ovarian, uterine and broad-ligament growths.

The tumors should be removed as soon as they cause symptoms or attain a considerable size. The pedicle should be carefully tied, and, when possible, the ends of the ligament should be united. If a sac were left after enucleation, it should be closed by suture or drained.

Two cases had died (of eleven operated on), *i.e.*, 18.18 per cent ; but the fatal cases had occurred twenty years ago.

MR. ALBAN DORAN was not surprised to find that more than half the cases were associated with fibroids in the uterus. In one instance where he had operated, he enucleated a fibro-myomatous growth of the size of a pigeon's egg from the uterine end of one round ligament and removed the fibroid uterus. It was significant that, as in the case of fibroid of the broad ligament, the same kind of tumor was found both in the intra- and extraperitoneal portion of the round ligament with relative frequency in young subjects, one patient being only four years old. Fibroid disease was also relatively common in the band representing arrested development of a uterine cornu, and in that case the corresponding round ligament was usually very large. Josephson and Falk believed that the rapid development of that ligament in fetal life was the cause of malformation of the uterus. Hence fibroid of the round ligament might in one sense represent a teratological condition. Quite recently Mr. Doran had removed a uterus bicornis for a large fibroid developed in the septum—another half-teratological condition, not very rare. Mr. Doran dwelt on the surgical aspect of operations involving division of the round ligament. He thought that Dr. Spencer was right in recommending the

union of the divided ends by suture, when practicable. The outer stump should not be allowed to recede towards the internal abdominal ring.

MR. SAMPSON HANDLEY said he would like to hear Dr. Spencer's views on the pathology of these fibro-myomata of the round ligament. Mr. Doran had brought forward reasons for thinking that they might originate from persistent embryonic structures. He would suggest that possibly fibro-myoma of the broad and of the round ligaments were genetically identical, and that both varieties of growth might originate from accessory Fallopian tubes. Koumann had shown how frequently these accessory tubes were present, and it was now known that certain broad ligament cysts arose from them. He had himself proved the presence of plicæ in such cysts. Since fibro-myoma was known occasionally to arise from the muscle of the normal Fallopian tube, it seemed probable that accessory tubes might give rise, not only to broad ligament cysts, but to fibro-myoma of the broad and round ligaments.

DR. HERBERT SPENCER, in reply, said he had been particularly interested in the remarks of Mr. Alban Doran, who had done so much valuable work on fibroids of the uterus and broad ligaments. He thought there was much to be said for the teratological origin of these tumors, especially as they sometimes contained adenomatous tissue, as in Cullen and Bluhm's cases. The enlargement of the round ligament in unicornuate uteri, mentioned by Mr. Alban Doran, he had not previously been aware of. With regard to Dr. Handley's suggestion, it had not been proved to his (Dr. Spencer's) satisfaction that accessory Fallopian tubes existed, and, when it had been proved, he could see no reason why they should be brought in to explain a simple fibro-myoma occurring in a fibro-myomatous structure like the round ligament.

DR. VICTOR BONNEY read a short communication on a case of

PYOMETRA IN ONE-HALF OF A SUBSEPTATE UTERUS.

Apart from the rarity of such a condition, the case presented a remarkable resemblance to a pregnancy occurring in a uterus, the seat of extensive perimetrial adhesions.

The patient had a history of recurring attacks of acute peritonitis extending over a period of many months. She had had a child seven months previous to the onset of the symptoms.

There had been amenorrhea for the two months immediately preceding the operation, and the uterus was enlarged to a corresponding size, and appeared to be embedded in an inflammatory mass. There was copious secretion in the breasts.

Opportunity for impregnation had occurred at about the requisite period, and had been shortly succeeded by a recrudescence of the inflammatory symptoms.

On opening the abdomen, the uterus was found to be the seat of universal adhesions and to be enlarged in accordance with the preoperative diagnosis.

The upper part of the uterus was cleared of adhesions with difficulty, and the tubes were inspected and found to be unthickened and normal, though adherent.

Dr. Bonney, believing that the patient was pregnant in a universally adherent uterus, determined to incise the fundus, and remove the gestation sac. Her condition, which was grave, was held to be the result of the increasing enlargement of the pregnant uterus dragging upon the extensive adhesions to the intestines.

On incising the uterus, a quantity of pus escaped from a cavity, which on further exploration, was held to be the left half of a subseptate uterus; the median septum having become adherent to the left uterine wall about the level of the internal os. The uterine sac was stitched to the abdominal wound and drained and the patient made a good recovery.

DR. ARNOLD W. W. LEA related a case of

ABSCESS IN THE WALL OF THE UTERUS,

in a patient who suffered from gonorrhea at the time of delivery, which developed during the puerperium and ruptured into the peritoneal cavity.

The patient had suffered, during the second week after delivery, from severe recurrent pain in the hypogastrium, but was able to walk about.

Six weeks after delivery she was suddenly seized with intense abdominal pain, followed by symptoms of acute peritonitis. Abdominal section was performed, and an abscess in the posterior wall of the fundus uteri was found to have ruptured into the peritoneal cavity. The abdomen was irrigated, and abdomino-vaginal drainage established by a large drainage tube.

The abscess cavity and the floor of the pelvis were packed with iodoform gauze. The patient, though very ill for a few days, made a perfect recovery.

Uterine abscess is rare. In many cases perforation takes place into the peritoneal cavity, unless operation is performed. Diagnosis is often difficult. Pain, associated with great sensitiveness and enlargement of the uterus, should lead to a suspicion of its presence, though it is often difficult to distinguish it from an infected myoma of the uterus wall. If perforation occurs, immediate abdominal section affords the best chance of success. If the abscess is single and one or both appendages are normal, conservative measures should be carried out. If the uterus is infiltrated with pus, hysterectomy should be performed.

If it is decided to leave the uterus, it is essential to provide efficient drainage. This may be best carried out through the vagina.

DR. AMAND ROUTH alluded to the great rarity of pregnancy during uterine fixation, and related a case of

PREGNANCY OCCURRING IN A UTERUS ENTIRELY FIXED BY PARAMETRIC EXUDATION,

resembling therefore in its essential aspects the case (25.) Bonney, as first diagnosed by him.

In this case, hemorrhage occurred at about the twelfth week, and the temperature rose to 102 degrees. It was impossible to draw down the cervix, but after rapid dilatation, he was nevertheless able to empty the uterus by means of his finger and a ring-forceps. He thought, therefore, that if Dr. Bonney's diagnosis had been correct, he would have been able to deal with it *per vaginam*, though as the case turned out, he had clearly adopted the best method. It was, however, not certainly a case of abscess in the half of a septate uterus, and might well be an abscess in the wall of the uterus, similar to Dr. Arnold Lea's.

REVIEWS.

LEHRBUCH DER GEBURTSHILFE ZUR WISSENSCHAFTLICHEN UND PRAKTISCHEN AUSBILDUNG FUER AERZTE UND STUDIERENDE. VON F. AHLFELD. Third revised edition, with 462 illustrations and 17 charts in the text. Fr. Wilh. Grunow, Leipzig, publisher, 1903.

It is needless to make any remarks about the author's experience; he is so well known as an authority of the highest class in this department of medicine, that any work from his pen should be, and is considered with respect. In the present edition he not only gives his own views but the literature on disputed points is given consideration.

The ovum generally finds its resting place on the anterior or posterior surface of the uterine body, a little beneath the openings of the Fallopian tubes. All other sites of embedding must be considered pathological. The liquor amnii is a transudation of the maternal and fetal blood vessels. An intermixture with urine must be considered accidental. Quantities of liquor amnii on either side of from 300 to 1,500 gm. in the second half of gestation, must be considered pathological. But little importance should be attached to restricted diet as described by Prochownik, in the prevention of adipose tissue development of the fetus. Infants measuring less than 48 cm. in length, may, as a rule, be considered, not full term. The weight of the infant is not of so much significance in determining the period of gestation. Besides the usual signs of determining the period of gestation before labor, the author attaches great importance to the intrauterine measurements of the fetus. The technic is accurately described. Vaginal examinations with the index and middle fingers are deprecated, the index finger alone is sufficient. For the purpose of hand sterilization, hot water scrubbing with soap and subsequently alcohol is reliable. Other disinfectants, like corrosive sublimate, carbolic acid, etc., must be used in such high concentration as to be at all effective, as to injure both the hands of the operator and the genitals of the patient. It is undesirable to preoperative dia-

trust to external examination alone, as is advocated by some authors. A perineum upon which a plastic operation has been performed is liable to be injured again at a subsequent confinement. In normal confinements Credé's expression of the placenta should never be practised; the waiting method should be adopted.

The custom of permitting patients to arise on a certain day after confinement instead of being governed by the condition of the pelvic organs, is severely criticized. The prevention of umbilical infection is best served by shortening the cord soon after birth as much as permissible and then using alcohol as a disinfectant for the remnant and its immediate surrounding, and omission of subsequent baths. The thriving of an infant seems to depend more on the quantity than the quality of the milk gotten from its mother's breast. The poison causing puerperal eclampsia is believed by the author to have its origin in the placenta. The poison is thought to be an alkaloid. Cæsarean section now advocated by a number of authors, to save the life of the patient in instances of eclampsia is only indicated if the woman's condition is *positively* hopeless, and the child still living.

He believes that the frequent occurrence of ectopic pregnancy in large cities is to be ascribed to the prevalence of gonorrhea in such localities. (Gonorrheal salpingitis.) The decidua formation in instances of tubal pregnancy is imperfect. Tubal abortion is much more frequent than tubal rupture; it is caused by hemorrhages between the ovum and the sac-wall. Unnecessary chloroform inhalation in instances of normal labor is deprecated; there is danger of greater loss of blood in those women. In instances of pregnancy complicated with fibroids, if removal of the uterus is indicated, the author advises after delivery of the child by Cæsarean section, supra-vaginal amputation above the ligature, and then removal of the cervix per vaginam. (In his technic in this procedure the author is behind the time; only one who has moderate experience with hysterectomies would sanction the combined operation.) Molar pregnancy is considered as a dangerous condition. When diagnosed the product of conception should be removed as soon as possible. If hemorrhage is present after emptying the uterus, tamponing of the cavity should be resorted to. Irrigating with antiseptic fluids should be avoided in such cases, because fluid may easily enter the dilated veins and cause sudden death. Such patients should also remain under observation several months, because of the danger of the formation of a malignant deciduoma. Among 8,000 confinements in the institution, there were 8 instances of precipitate labor.

The chapter on deformed pelves is very interesting, and has excellent illustrations. The Walcher position is advocated in extraction of the after-coming head. Among operations for the correction of retro-displacements, he mentions that the Alexander operation need not be considered in connection with parturition, because it does not beget abnormalities. (Correct view, B.)

In instances of breech presentations, attempts at extraction are strongly advised against, unless there is an urgent indication. When placenta previa is present, a preference is given to the intrauterine use of colpeurynter devised by Champetier de Ribes for the purpose of controlling the bleeding, rather than version and tamponing with the breech. The performing of Cæsarean section in this condition is severely criticized. Adhesion of the presenting part of the placenta in placenta previa is comparatively frequent. Real atony of the uterus is a very rare occurrence if the expectant plan of treatment is practised in the third stage of labor. It was observed but six times in 6,000 labors. The sovereign treatment for uterine hemorrhage prior to the expulsion of the placenta, is *properly* applied uterine massage. The expression of the placenta is advised if it is not spontaneously expelled after *two* hours after the birth of the infant. Women who have had to have manual separation of the placenta done in two successive labors should consult a physician with a view to intrauterine treatment before the occurrence of another conception. The best treatment for hemorrhage caused by uterine atony is hot intrauterine irrigations. No reliance can be placed on drugs. Intrauterine tamponade is also condemned in these cases. Children born with suspended animation are best treated by clearing the air passages and immersion in warm water; all other treatment is superfluous and objectionable. If the child be positively dead, no form of delivery should be undertaken which will jeopardize the mother; *i.e.*, no difficult version; application of forceps if the pelvis is small. Embryotomy or perforation are preferable in such instances.

In operative obstetrics the hand which is used for external manipulations is advised to be wrapped in sterile flannel saturated with alcohol, so as to keep the hand constantly sterile, so that it may be used internally at any time.

Regarding the "vaginal Cæsarean section" advocated by Duehrssen, the author considers the true Cæsarean section safer, at the termination of pregnancy. (We, too, believe it a better practise than to incise the cervix and lower uterine segment, following this by extraction of the child.) The application of forceps is considered very much misused. In 6,000 cases in his clinic they were applied but 148 times; not once to the after-coming head. High forceps is only justifiable if the child is very small, the pelvis large, and the necessity exists for a very rapid extraction. As a rule, version is a safer procedure. The application of forceps to the breech is not advised. The author believes that symphysiotomy has been performed much more frequently than was justified, and believes that it will eventually be relegated again to the past, in Germany. In the production of puerperal fever the existence of gonococci has been underestimated. Curetting of a puerperal septic uterus is cautioned against; a puerperal uterus should never be curetted during the first few days after confinement. (We strongly uphold the author's views on this point.)

Opium is highly commended in beginning parametritis, but it must be given in sufficiently large doses to keep the patient absolutely quiet. The beneficent action of Credé's silver salt and ointment is somewhat doubtful. The most important and early poisoning symptoms of diffuse septic peritonitis, manifest themselves upon the heart, causing cardiac paresis and consequently an unusually rapid pulse (150 or more), despite a perhaps low temperature. We can recommend the book as one of the most conservative and practical text-books in the German language, valuable both to the student and the practitioner of many years' experience.

H. J. B.

A TEXT-BOOK OF THE PRACTICE OF MEDICINE. Designed for the Use of Students. By JAMES MAGOFFIN FRENCH, M.D., Lecturer on the Theory and Practice of Medicine, Medical College of Ohio, etc. Pp. 780, illustrated by ten plates and fifty wood engravings. New York: William Wood and Company, 1903.

A brief outline of pathology and bacteriology and a consideration of terms constantly employed in medicine serve as an introduction to the body of the work, which is devoted to the study of disease, including affections of the nervous system. There is no pretence of originality but the volume is a careful and judicious compilation from leading medical books. It is distinctly practical, all case reports, statistics and extensive discussion of theories being omitted. The pathology is sufficiently thorough, the symptomatology clear, the treatment as a rule sound and conservative. An exception to this is the lack of emphasis of the necessity for systematic rest rather than systematic exercise in the management of active cases of pulmonary tuberculosis. In some instances the differential diagnosis is not as full as might be desired. The more important diseases are treated at length; the rare affections are merely described in outline. A small section is devoted to clinical methods of examination. The work is clear and systematic, excellent for the use of students.

H. D.

GENERAL PATHOLOGY OR THE SCIENCE OF THE CAUSES, NATURE AND COURSE OF THE PROCESSES OF DISEASE. By DR. ERNST ZIEGLER, Professor of Pathological Anatomy and of General Pathology in the University of Freiburg in Breslau. Translated from the tenth revised German Edition (Gustav Fischer, Jena, 1901) and edited by ALDRED SCOTT WARTHIN, Ph.D., M.D., Professor of Pathology and Director of the Pathological Laboratory in the University of Michigan, Ann Arbor, Michigan. Pp. 760, profusely illustrated. New York: William Wood and Company, 1903.

It is with pleasure that we note the revision of this standard work on pathology, now translated from its tenth edition in the original tongue. Appearing at the same time of Virchow's eightieth

birthday, Prof. Ziegler yielded a very graceful tribute to that master mind in pathology by dedicating to him the new edition, in order that he may "thereby learn that also those to whom it was not granted to sit as students at his feet have striven to build further upon the foundation laid by him, and have seen in him their master, to whom they are attached in gratitude and veneration." One of the most valuable features of the new edition in our own language is the insertion of the literature up to the time of publication in German in 1901. The American editor has filled the gap necessitated by the time required for translation and revision by adding references to the more recent American publications which he deems of especial importance. The chapters entitled Extrinsic and Intrinsic Causes of Disease; Spread and Generalization of Disease Throughout the Organism, Auto-intoxication and Secondary Diseases, and The Protective and Healing Forces of the Human Body, The Acquiring of Immunity have been entirely rewritten. Recent studies of the subject of immunity have rendered this particularly necessary. The author states that although he has altered the form of expression in some places his views concerning inflammation and tumors are unchanged. The chapters on vegetable and animal parasites have also been especially revised. There are minor alterations in the text of other portions and changes in the illustrations.

THE JOHNS HOPKINS HOSPITAL REPORTS, VOL. XI. Baltimore: The Johns Hopkins Press, 1903.

The greater part of this volume is devoted to Pneumothorax: A Historical, Clinical and Experimental Study, by Charles P. Emerson, which shows the expenditure of a vast amount of literary labor. The paper opens with the abstracts of 358 articles and books upon the subject from the earliest times to the present day. The writer then analyzes those in relation to the history, etiology and pathology. He also presents the case histories of fifty cases from various classified causes observed in the wards of the Johns Hopkins Hospital. The cause of the physical signs of pneumothorax is studied with special care. The symptoms and other aspects of the subject are more briefly treated.

A second paper by Henry W. Cook and John B. Briggs contains Clinical Observations on Blood Pressure in various medical, surgical and obstetrical conditions. They state that the mere bulk of the fetus is mechanically a factor in maintaining the relatively normal state of tension in the peripheral vessels during pregnancy and is evident from the fact that engagement of the head in the pelvis, with consequent reduction in total intra-abdominal fetal mass, is always accompanied by fall in blood pressure. In labor pressure is shown to rise with each pain. The onset of hypertension of the pulse during pregnancy should always suggest the probability of eclampsia.

The volume contains also a paper by Martin B. Tinker on the Value of Tuberculin in Surgical Diagnosis. It contains the tech-

nique of preparation and injection. Martin regards the method as harmless and reliable as a diagnostic agent.

PROGRESSIVE MEDICINE. A Quarterly Digest of Advances, Discoveries, and Improvements in the Medical and Surgical Sciences. Edited by HOBART AMORY HARE, M.D., assisted by H. R. M. LANDIS, M.D. Vol. IV. December, 1903. Pp. 444, with 46 illustrations. Lea Brothers & Co., Philadelphia and New York, 1903.

The last volume for 1903 covers the literature for 1902 and the early months of 1903. It opens with Diseases of the Digestive Tract and Allied Organs, by John C. Hemmeter. This includes eulogistic references to the author's own publications on gastric and intestinal affections, and conveys the idea that a little work has also been done by others in this field during the year. In view of the recent knowledge of the prevalence of uncinariasis in this country the abstracts of papers on intestinal parasites are of interest, though a number of other papers have appeared within the last few months. Other papers on this subject are found in the chapter on Hygiene. A number of articles on diagnosis of diseases of the liver and gall-bladder are worthy of perusal, while those of Opie and Fitz on pancreatic diseases demand particular attention. In the chapter by J. C. Bloodgood, on Surgery of the Extremities, are included abstracts on surgical shock, the use of adrenalin in shock and hemorrhage, anesthesia, and many articles upon fractures. Perhaps the most interesting portion of this chapter is that on benign and malignant tumors, based chiefly upon the writer's own work. Other chapters are by W. T. Belfield, on Genito-urinary Diseases; by J. R. Bradford, on Diseases of the Kidneys; by A. P. Brubaker, on Physiology; and by Charles Harrington, on Hygiene. The last includes the discussion of drinking water, disinfection, and particularly the subject of human and bovine tuberculosis, and the transmission of typhoid fever. The work closes with a chapter on Therapeutics by H. R. M. Landis.

BRIEF OF CURRENT LITERATURE.

OBSTETRICS.

Appendicitis and Pregnancy.—Monod (*Comptes Rend. de la Soc. d'Obst., de Gyn., et de Ped. de Paris*, T. V., 1903) reports three cases of appendicitis operated upon in the interval during pregnancy. As any appendix which has been inflamed may subsequently cause trouble, the seriousness of which cannot be foreseen, he would remove the organ without waiting for another attack. This he considers especially important in the pregnant woman because of the particular gravity of acute appendicitis occurring during pregnancy. The existence of pregnancy does not seem to influence the prognosis of the operation, nor does the latter appear to have any unfavorable effect upon the course of gestation. The operation should preferably be performed at from the third to the fourth month.

Rupture of the Uterus with Tarnier's Dilator.—As showing the possible danger of the use of instrumental dilators, A. Grossé (*Comptes Rend. de la Soc. d'Obst., de Gyn., et de Ped. de Paris*, T. V., 1903) reports a case of protracted labor in which Tarnier's instrument was employed and a rupture of the uterus was soon after discovered. Hysterectomy and death. The line of rupture began at exactly the point where one of the branches of the instrument was applied. The writer believes that in such cases as this, in which the uterus is strongly contracted upon a large fetus several hours after the liquor amnii has escaped, the instrument must be used with great caution, separating the branches slowly.

Remote Effects Upon the Child of Maternal Typhoid During Pregnancy.—Chambrelent (*Bull. de la Soc. d'Obst. de Paris*, Nos. 6 and 7, 1903) reports five cases of typhoid fever occurring during pregnancy, in which the children, after a period of several years, had shown no evil effects, either physical or mental.

Muscular Tissue of the Cervix.—G. Fieux (*Ann. de Gyn. et d'Obst.*, June, 1903) presents the results of a study of the cervix in a series of cases from that of a fetus at term to that of a woman after labor. In the fetus and little girl he found the muscular element very slightly developed. At the time of puberty the cervix contains muscle fibers well developed, but a little less so than in the body of the organ. They interlace in all directions and are not separable into layers except in the intra-vaginal portion, where a few bundles are arranged in a horizontal or radiating manner beneath the mucosa of the cervical canal. During pregnancy, while the muscle cells of the body hypertrophy, those of the cervix undergo a corresponding atrophy from below up-

ward, so that at term the cervix is practically only a mass of vascular connective tissue. In the supra-vaginal portion there is, at the periphery, a thin muscular band whose longitudinal and circular fibers become more important at the internal os. Fieux thinks it probable that the gradual softening of the cervix from below upward is the result of a progressive connective tissue hyperplasia which gradually strangles the muscle fibers. After pregnancy, the cervix gradually regains its normal muscular structure. In women who have borne many children the muscular tissue of the cervix becomes scanty, especially in the vaginal portion. The practical application of this study to obstetrics is that it would appear to disprove the possibility of active retraction of the cervix upon the neck in breech cases and of so-called spasmodic rigidity of the cervix. The muscle tissue would appear to be entirely too scanty for either of these to occur.

Extraction of the After-coming Head at the Superior Strait.

—When the pelvis is contracted, too long continued pressure upon the fundus may cause the chin to ride above the ilio-pectineal eminence of one side or one horizontal ramus of the pubes. Pierre Budin and Gifford (*Comptes Rendus de la Soc. d'Obst. de Paris*; Nos. 6 and 7, 1903) advise ceasing efforts at uterine expression as soon as the shoulders have descended into the cavity. If this accident does happen, and the chin rests upon the pelvic brim, pointing to the left and forwards for example, they would introduce the left hand posteriorly and pass the index or middle finger forward around the head until the tip is in the mouth, and by traction cause the head to rotate until the chin points to the left and the head can descend. If this fails, the other hand should be used upon the abdomen to raise the head. The thenar eminence presses inward just above the upper border of the pubes, pushing the chin upward and backward, while the finger tips press upon the antero-lateral portion of the head in the same way. The maneuver of rotation may then succeed. If the right hand has been employed internally, the left is used over the abdomen, the thumb under the chin just above the pubis.

Abnormal Ossification of Fetal Skull.—In the case reported by J. Thoyer-Rozat (*Bull. de la Soc. d'Obst. de Paris*, Nos. 6 and 7, 1903) a diagnosis of R. O. A. position had been made by abdominal palpation; but by vaginal examination the only fontanelle felt was one with four sutures and four angles; with the sagittal suture in the left oblique diameter. This led to a revision of the diagnosis, the case then being considered an L. O. P. Subsequently vaginal examination showed another similar fontanelle at the anterior extremity of the sagittal suture. The position was an R. O. A. The occipital bone had two centers of ossification separated by an interoccipital suture which was continuous with the sagittal, thus simulating the anterior fontanelle. The writer reviews other possible sources of error in distinguishing the fontanelles, such as over-riding of frontal bones, presence of a Wormian bone, faulty ossification of an area

in a cranial bone, etc. Whenever it is impossible to palpate typical anterior and posterior fontanelles by changing the degree of flexion of the head, he would feel for an ear and determine the position of the occiput by observing the relative position of the adjacent temporal fontanelle.

GYNECOLOGY AND ABDOMINAL SURGERY.

Tuberculosis of Ovarian Tumors.—This combination of lesions is in itself a rarity, but thirteen cases, including that of F. Prüsmann (*Arch. für Gyn.*, Bd. 68, H. 3), having been reported. The writer's case appears to possess the unusual feature of being one in which the tuberculous process was primary in the tumor. Of the thirteen cases on record, eleven were glandular cystomata and two dermoid cysts. The tumor described by Prüsmann was removed by laparotomy from a sterile woman of thirty-four. It was a multilocular cyst of the right ovary whose inner surface was composed of granulation tissue, devoid of blood vessels, densely infiltrated with round cells, necrotic internally, and containing giant-cells and tubercle bacilli. In the broad ligament there were areas of round-cell infiltration in the lymph spaces near the tumor, and in these areas were giant-cells. This finding would point to a primary infection from the vagina by way of the lymphatics. Physical examination failed to show signs of tuberculosis in the lungs or elsewhere, but as the patient recovered the existence of a primary focus other than in the tumor could not be excluded.

Rupture of Tubal Collections During Examination.—Two instances of rupture of a tubal mass during gentle bi-manual palpation are recorded by F. Legneu (*Comptes Rend. de la Soc. d'Obst., de Gyn., et de Ped. de Paris*, T. V., 1903). Such an accident is recognizable by the sudden disappearance of the tumor, with or without the patient feeling pain. It demands immediate laparotomy on account of the chance of its contents being infectious. The body should be kept horizontal, as raising the pelvis allows the tubal contents to gravitate upwards.

Condition of the Blood in Cases of Ovarian Cyst.—S. Pozzi and N. Bender (*Comptes Rend. de la Soc. d'Obst., de Gyn., et de Ped. de Paris*, July, 1903) have studied the blood of a number of patients with benign and malignant ovarian cysts. Their report is a summary of the results, omitting details, and their chief conclusions are as follows: 1. Blood examination usually permits one to decide whether an ovarian cyst is benign or malignant. 2. When the red cells are normal in number and the leucocytes are between 6,000 and 8,000, the cyst is benign. 3. A moderate leucocytosis with normal red-cell count does not prove that the cyst is malignant, as such a leucocytosis occurs frequently with large cysts and is constant when suppuration of the cyst takes place. Diminution of the red cells with a leucocytosis of from 12,000 to 20,000 makes one think of malignant degeneration.

The significance of the early anemia is far greater than that of the leucocytosis. The hemoglobin determination is of value; a differential white-cell count is useless. The prognosis of operative treatment is poor in cases with marked anemia and leucocytosis.

Bérard and Descos (*Rev. de Gyn. et de Chir. Abdom.*, T. VII., No. 1) summarize the significance of leucocytosis in diseases of the female genitals as the result of a study of twenty-five cases. If the leucocytes number 12,000 to 13,000 or more, with 80 to 85 per cent. of polynuclears there is a suppurative lesion or one which is becoming suppurative, such as an infected hematocoele, and the pus is virulent. With less than 10,000 to 11,000 leucocytes there is no pus or only pus of a moderate degree of virulence. In the first class of cases the vaginal route is to be chosen in operating; in the latter the abdominal is sufficiently safe if the peritoneal cavity is well protected.

Diagnosis of Cancer of the Body of the Uterus.—A. Bourcier and A. Venot (*Rev. Mens. de Gyn., Obst. and Ped., de Bordeaux*, T. V., No. 6) considers that the problem of diagnosis in cancer of the body of the uterus consists most often in the interpretation of uterine hemorrhages. Other symptoms are of secondary importance. The differential diagnosis is between metritis, fibroids and cancer. Aside from certain cases with intermittent paroxysmal pains in which the diagnosis is evident it is always difficult to decide by simple clinical examination. It is then necessary to have recourse to intra-uterine palpation and examination of débris from the cavity of the uterus, although even histological evidence may not be decisive. If this is the case the subsequent course must be watched. Rapid return of hemorrhages after temporary improvement following curettage points rather to cancer than to metritis. If bleeding ceases after several treatments with the continuous current the case is not one of cancer.

DISEASES OF CHILDREN.

Spondylitis, with Especial Reference to Its Later Course.—Hugelshofer (*Jahrb. f. Kinderhk.*, Vol. 58, No. 5) finds that spondylitis tuberculosa, like other bone tuberculosis, is more common in male than in female subjects. The onset occurs most frequently in early childhood, the third year showing the greatest number of cases. Hereditary predisposition was present in a little less than half of the author's cases, and trauma could be noted as an etiological factor in but one-quarter of all the cases observed. Vertebral tuberculosis has a predilection for the lower half of the spinal column, the first lumbar vertebra being most often affected. Among the complications, abscesses were diagnosed clinically in two-fifths of the cases, chiefly of the psoas variety, originating from the lumbar spine. Paralysis occurred in 10 per cent. As paralysis is most common in cervical spondylitis, and as two-thirds of the cases end fatally, it marks the cervical

cases as the most dangerous of all spinal affections. Amyloid degeneration was found in a little over one-tenth, and tuberculous complications in two-fifths of all cases. The prognosis is dubious. The mortality rate was 57.6 per cent., and only 31.3 per cent. were totally cured. The final result in the cured cases is satisfactory so far as motion and usefulness are concerned, but it is lacking in cosmetic effect. Treatment must begin early and be continued for a long time, having for its object the limiting of deformity.

Tubercular Glands.—Daniel N. Eisendrath (*Med. Examiner and Practitioner*, November, 1903) writes that it is a well established fact that tuberculosis of a cervical lymph gland (which forms over 89 per cent. of all cases of tubercular lymphadenitis) is never a primary condition, but that the atrium of infection can be found in the nasopharynx (in the adenoid vegetations), in the nose (through chronic rhinitis, especially in children), through the crypts of diseased faucial tonsils, through the atria afforded by carious teeth, or through the gateway existing in a chronic suppurative otitis media. A study of this subject may lead to the following conclusions: (1) Tubercular glands of the various regions are frequently followed by foci elsewhere, the lungs being most frequently involved (28 per cent.). Next in frequency are the bones and joints. (2) Operative treatment is followed by the largest number of permanent recoveries (from 54 to 80 per cent.). (3) A late focus following tuberculous adenitis in early life should always be kept in mind as a possibility.

Tuberculous Meningitis Following Acute Suppurated Otitis Media, Complicated in One Case by Chronic Internal Hydrocephalus.—Haïke (*Jahrb. f. Kinderhk.*, Vol. 58, No. 4) details two cases, the older that of a five-year-old girl with a tuberculous family history. Five weeks before death she developed a suppurative otitis media, followed in about three weeks by symptoms of tuberculous meningitis. At the autopsy a purulent tuberculous meningitis was found at the base of the brain, together with an internal hydrocephalus. There was no disease of the temporal bone, and no tuberculosis could be found on microscopic examination of the lining of the auditory canal. The second case was a seven-months-old infant of a healthy mother, in whom tuberculous meningitis developed two weeks after the appearance of an otitis media. No autopsy was obtained. It is the author's opinion that the toxic products of the suppurative ear disease act upon the cerebral meningitis in such a way as to prepare them to be a suitable nidus for the development of the tubercle bacillus. While anatomical and bacteriological proof of this assumption is lacking, it is hoped that it may serve to elucidate the relationship of middle-ear disease and tuberculosis of the brain and meningitis.

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ORIGINAL COMMUNICATIONS.

OPERATIVE TREATMENT OF RETROVERSION OF THE
UTERUS; WITH REPORT OF CASES.

BY

FRANKLIN H. MARTIN, M.D.,

Professor of Gynecology, Post-Graduate Medical School, Chicago.

OPERATIONS which have been devised with the primary object in view of correcting retroversions and retroflexions of the uterus may be grouped under ten heads:—

- I. Operations on the mucous membrane of the vault of the vagina.
- II. Vaginal fixation.
- III. Vaginal suspension.
- IV. Vesico-fixation.
- V. Vaginal shortening of the sacro-uterine ligaments.
- VI. Vaginal shortening of the round ligaments.
- VII. Alexander's operation.
- VIII. Intra-abdominal shortening of the round ligaments.
- IX. Intra-abdominal shortening of the sacro-uterine ligaments.
- X. Ventral suspension.

I. OPERATIONS OF THE MUCOUS MEMBRANE OF THE VAULT OF THE
VAGINA.

Amussat,¹ in 1850, obliterated the space between the cervix and the posterior wall of the vagina by applying caustic potash

and the actual cautery, which caused adhesions to form. In 1883 *Herrick*² sutured the cervix to the posterior vaginal wall. *Nicoletis*³ sutured the anterior surface of the cervix to the posterior vaginal wall.

Schücking,⁴ in 1900, describes an operative procedure which utilizes one or two well known principles. His object is to transfer the cervix from a forward position in the pelvis to a position in the hollow of the sacrum. He accomplishes this by lengthening the anterior vaginal wall by incising it transversely near the cervix and uniting it longitudinally, and by shortening the vault of the vagina posterior to the cervix by incising it longitudinally and uniting it transversely. He reports seven cases in which he obtained satisfactory results in non-adherent retroversions.

*A. H. Goelet*⁵ denuded the posterior wall of the cervix and united it to the denuded surface of the posterior wall of the vault of the vagina, thus accomplishing a backward suspension of the cervix. This method has been followed by other operators.

II. AND III. VAGINAL FIXATIONS AND SUSPENSIONS.

*Sänger*⁶ in 1888 suggested suturing the uterus to the anterior vaginal wall. *Schücking*,⁷ a little later, carried the suggestion into effect. He contrived for the purpose a needle with a long handle. The operation, however, partook of blind surgery and was not followed up. Experiments on cadavers demonstrate its dangers to the bladder.

*Mackenrodt*⁸ made a longitudinal incision in the vaginal mucous membrane and passed his fixation sutures just above the internal os. *Dührssen*⁹ made a transverse incision and passed his sutures higher up on the uterine wall. Neither opened the peritoneum.

*Winter*¹⁰ modified the Mackenrodt operation by (a) always performing anterior colporrhaphy so as to make the anterior vaginal wall more rigid and hence a better fixed point for the uterine fixation sutures; and (b) by carrying the fixation sutures higher up on the wall of the uterus. *Vineberg*¹¹ was the first to adopt this method in this country, doing Winter's modification of the Mackenrodt procedure. *Küstner*¹² modified Mackenrodt's operation by opening the peritoneum in every case, and *Dührssen*¹³ made the same addition to Mackenrodt's operation in the same year. This was later followed by *Vineberg*¹⁴ also in the same year.

In 1896 *Wertheim, of Vienna*¹⁸ suggested making a vaginal operation out of the ventral-fixation operation of Ohlshausen, by suturing the round ligaments and adjacent broad ligaments to the abdominal wall through a vaginal incision.

Pregnancies Following Vaginal Fixations and Suspensions.

*G. V. Knorre*¹⁶ reports a pregnancy occurring four weeks after leaving the hospital after vaginal fixation, according to a modified Mackenrodt operation. The patient went to full term in normal labor and the position of the uterus was not changed after parturition.

P. Strassman, of Berlin,¹⁷ reported a series of dystocias as a result of vaginal fixations after Dührssen.

*Graefe*¹⁸ reported a case of serious disturbances of labor in a case in which Mackenrodt's technique had been employed, whereupon Mackenrodt publicly¹⁹ declared that he had discarded his operation of vaginal fixation and had substituted therefor vesicofixation.

*Berndt*¹⁸ reports one case of dystocia following vagino-fixation in which Cæsarian section was followed by recovery.

*Vineberg*²¹ in his first forty-five cases had nothing more serious than abortions in four cases between three and four months.

*Rühl*²² reports five cases of dystocia following Mackenrodt's method. Three of these required difficult version, including one perforation and one forceps delivery. The other two cases were delivered only after incision of the anterior lower segment of the uterus.

In 1896, *Vineberg*²³ gathered from literature and reported fifty-eight cases of labor following vaginal fixation of the uterus. Interference was necessary in nine of these cases, as follows: One Porro operation, one Cæsarian section, two cervico-uterine incisions, and five others. A further analysis of the cases shows that the difficulties occurred in the cases operated upon after the Dührssen method, with the single exception of a case reported by Graefe, Vineberg considers that the fault in the Dührssen method lies in attaching the anterior portion of the uterus directly to the vaginal incision.

F. J. McCann,²⁴ of London, reports one case of pregnancy following vaginal-fixation, in which the course of the gestation and the labor were normal.

Comment on Pregnancies Following Vaginal Fixation and Suspension.

Pregnancies following the original operation of vaginal-fixation ended disastrously. The operation gradually evolved itself into a suspension and the later cases of pregnancy, as reported by Vineberg, experienced less interference, although the operations, because of these limited indications and dangers, are not destined to become popular.

IV. VESICO-FIXATION.

*W. R. Pryor*²⁵ united the uterus to the bladder by scarification and sutures. *N. J. Hawley*, of St. Louis, describes²⁶ an operation for vesico-fixation, in which he fixes the fundus of the uterus to the vesical peritoneum through a vaginal incision. He reports one pregnancy following his operation. The gestation and labor were normal and the uterus remained in position after the labor.

V. VAGINAL SHORTENING OF THE SACRO-UTERINE LIGAMENTS.

In 1888 *Kelly* conceived and undertook an operation for shortening the utero-sacral ligaments through the vagina. In the same year, *Byford*²⁸ in the fourth edition of his book, reported two cases of shortening the utero-sacral ligaments through the vagina. He pulled the cervix forward until the ligament was perceptible to the examining finger, and shortened the ligaments about one inch by the sense of touch and without incision. He employed his method upon but one ligament in each case, using cat-gut in one and silkworm-gut in the other, with failure from the cat-gut.

*Freund*²⁹ practiced this operation in the following year. He sutures the utero-sacral ligaments to the posterior wall of the Douglas pouch and obliterates the pouch by aseptic adhesive inflammation by the use of iodoform gauze.

Richelot's operation³⁰ covers the loosening of all adhesions, the abdominal anteversion of the uterus, denuding the posterior vaginal portion of the cervix and suturing it to the vaginal wall. *Frömmel*, who also did this operation, according to *Dorland*³¹ first loosened the adhesions, anteverted the uterus, and then sutured the recto-uterine ligaments in the neighborhood of their origin from the uterus to the peritoneum of the lateral pelvic wall.

In 1891, *Herrick*³¹ and *Sanger*³² shortened these ligaments by

the vaginal route, and *Gottschalk*³³ in 1896 did the same operation. During the same year Godinho shortened the utero-sacral ligaments and the round ligaments, both through the vagina.

*Bovee*³⁴ did his first operation for the shortening of the utero-sacral ligaments through the vagina in June, 1897, and in 1902 had done the operation in seven additional cases.

I do not find any reports of pregnancies following this operation.

VI. VAGINAL SHORTENING OF THE ROUND LIGAMENTS.

*H. N. Vineberg*³⁵ performed a vaginal operation for the shortening of the round ligaments in February, 1896, reporting his method of 1896 in the *Medical News*. *Wertheim*³⁶ did the same operation, and *Bode*³⁷ published in the same year a method essentially the same as Wertheim's.

In 1896, *Byford*³⁸ describes a vaginal operation, which consists of the following procedures: anterior colporrhaphy, suture of the fundus of the uterus to the peritoneum covering the upper portion of the bladder, and suture of the round ligament to the uterus above its normal insertion at a point as near the pubic end as can be grasped.

*Ries*¹⁰² presented a new operation for retrodisplaced uterus to the American Medical Association in 1901. His operation consists in obliterating the superabundance of the over-stretched and elongated round ligaments by folding each ligament on itself and burying the folded portion in a transverse tunnel constructed in the anterior wall of the uterus between the normal insertions of the round ligaments.

J. Riddle Goffe,³⁹ in 1897, describes a method of shortening the round ligaments through the anterior vaginal fornix by a method very similar to Byford's. He describes his work as follows:⁴⁰ After doing repair work on the appendages, a loop is made of the round ligaments by catching it near its middle and drawing it toward the vaginal incision. A silk ligature is passed through its most distant outer end and its distant uterine end and these are tied, thus shortening the ligament the amount of the tissue in the loop.

Pregnancies Following Vaginal Shortening of the Round Ligaments.

*Goffe*⁴¹ in 1898 reported one case pregnant and delivered normally after his operation for the vaginal shortening of the round

ligaments, and states that the uterus was found in proper position after the labor. A second case, which had long been sterile, had become pregnant and went through normal labor and delivery. Another case was at that time pregnant, five months, with no complications apparent. He reports two miscarriages, one in a syphilitic patient, and one cause not known. In 1902, Goffe⁴² makes a further report, covering a list of 130 operations, including ten pregnancies, eight of which went to full term, resulting in normal labors, and no recurrence of the retroversion.

Vineberg,⁴³ in 1902, reports eight pregnancies in six patients, going to full term and terminating in easy and normal labors. There were two miscarriages; one of these patients, however, subsequently going to full term and having a normal labor.

One of *Ries*'⁴⁴ patients conceived three months after her operation, went to term and had a normal confinement. Pelvic examination some time afterwards showed the uterus in place.

*MacNaughton-Jones*⁴⁵ reported one case of pregnancy with normal labor.

VII. ALEXANDER'S OPERATION.

Alquie,⁴⁶ a Frenchman, conceived the idea of shortening the round ligaments for retroversion and presented a memorial to the Academy of Medicine in November, 1840. He did not operate. *Alexander*, of Liverpool, performed his first operation December 14, 1881, but did not publish until January, 1883⁴⁷. *Adams*, of Glasgow, operated independently two months later than *Alexander*, and published more than six months earlier.⁴⁸ *Kellogg*,⁴⁹ of Battle Creek, modified the operation in 1888 by cutting for the ligament at the internal ring, where it is of maximum size, bringing it up by thrusting a blunt hook into the canal over the internal ring, isolating the ligament and securing it by weaving it into the tendon or aponeurosis of the external oblique.

In 1894, *Bachelor*, of New Zealand,⁴⁹ described an operation on the auto-plastic principle to obtain a uniform and efficient shortening of the ligaments in a way to avoid buried sutures of any kind at a point so near the skin surface and in a location so difficult to maintain aseptic. In 1896, two years later, I independently conceived and executed⁵⁰ the identical technique of *Bachelor*'s operation. While it has been frequently described, I will briefly summarize its steps, because it is the method that I still

pursue and which I employed in the cases which I report in this paper.

(a) The ligaments are isolated in the ordinary manner and drawn out.

(b) A pointed artery forceps is passed beneath the bridge of tissue between the lower ends of the wounds on a level with the aponeurosis, grasps the ligament of one side and draws it through into the opening on the opposite side.

(c) The bridge of tissue is now drawn to one side and the two ligaments are tied one to the other in a loose double knot.

(d) The canals and the wound are closed in the ordinary way, with interrupted cat-gut for the deep tissues and subcutaneous silver wire suture for the skin.

Goldsphohn,⁵¹ in 1897, extended the limitations of the Alexander operation by first breaking up adhesions existing in the pelvis and repairing pathological conditions of the appendages if necessary, through the dilated internal ring, before proceeding to shorten the ligaments.

Pregnancies Following Alexander Operation.

*J. F. Johnson*⁵² has collected the following reports of pregnancies following Alexander operations: John C. Blake, three normal labors and gestations in seventy cases; William Conant, seven cases, one patient being pregnant twice, and conditions normal in the six patients; Malcolm Storer reports two pregnancies and J. B. Swift two, with conditions normal in each case. Johnson also includes in his report the cases of L. H. Boldt, four in number and all normal, and four normal cases of Paul Mundé, with four cases of Polk, and twelve of his own, in which the labors were normal and the conditions remained the same after parturition.

*Stocker*⁵³ reports eight normal cases following Alexander's.

In 1897 *Kellogg*⁵⁴ reported twenty-one cases pregnant in 591 operations, with twenty-two pregnancies, one patient having conceived twice. *Charles P. Noble*,⁵⁵ in a discussion, 1897, reported pregnancy following Alexander's operation at the fourth month of gestation. In the same discussion *Schoemacker*⁵⁵ reported a six months' abortion following an Alexander operation.

*Edebohl*s,⁵⁶ in 1898, reports twelve pregnancies in seventy-one cases operated, with two relapses following pregnancy. *Burrage*,⁵⁷ in 1898, reported twelve pregnancies in seventy-one Alexanders, with two relapses following pregnancies.

In 1902 *Goldspohn*⁸⁸ reports seventeen pregnancies after his own operation; eleven went to full term with normal deliveries except one breech presentation; he reports four abortions, three of which were confessedly induced and one spontaneous; two of his cases were not yet delivered at the time of making the report.

G. Rothwell Adam,⁸⁹ in 1903, reports twenty-one pregnancies following Alexander's operation.

In the series of cases I report to-night,⁹⁰ will be found twelve pregnancies without relapse.

Summary of Pregnancies Following Alexanders.

Whole number of pregnancies collected, 144. One hundred and forty of these had been confined or aborted at the time of the individual reports. There were six abortions reported, three of which were induced, leaving 134 cases which had normal gestations and labors. Four were still in gestation at the time of the individual reports. One breech labor was reported. There are five relapses noted.

Reports of Author's Cases.

I have the honor to present to-night a report of a second series of Alexander operations following my auto-plastic method, and extending from January 1, 1901, to January 1, 1904. I have tabulated these cases and have kept a complete record of them as far as possible. The small number of cases operated indicates how conservative I am in selecting well my cases, in that there are only eighteen cases during this period. This series, with the 61 cases tabulated and presented to the American Medical Association in 1900 makes a whole series of 79 cases.

In this second series of cases I have covered the period from January 1, 1901, to December 31, 1903. I have been able to hear directly from only ten of the eighteen cases operated during this time, and of this ten I have had the privilege of making a personal examination of seven.

I have to report 2 pregnancies in this series, case 4 being confined less than a year ago in normal labor, and case 12 being confined ten months after her operation, labor being normal and without complications.

Case 18 is well six months after the operation; cases 8, 14, 15, and 17 are well one year after the operation; cases 6 and 12 are well two years after the operation, the latter after confinement;

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No.	Name	Residence	Date	Hospital	Diagnosis	Operation	Additional Operations	Result
3	Miss K. B.	Indiana	2-5-'01	Woman's	Anteflexion; retroversion; endometritis	Alexander 3 yrs. prev.	x Curetage	Success. "12-28-'03. Fine boy since."
4	Miss C. P.	Iowa	3-2-'01	Woman's	Endometritis; dysmenorrhea; retroversion	Alexander	Curetage	Success.
5	Mrs. H. C.	Illinois	4-20-'01	Woman's	Endometritis; retroversion	Alexander	Curetage	12-21-'03. Examined in office; much improved; perfectly well; menstruation normal and painless; uterus in perfect position and movable all over pelvis.
6	Mrs. S. W. J.	Chicago	4-27-'02	Woman's	Endometritis; retroversion	Alexander	Curetage	x x Success. Examined a year later; uterus in perfect position; dysmenorrhea not entirely relieved.
7	Mrs. A. P.	Chicago	5-22-'01	Charity	Dys.; lac. perineum; endometritis; retroversion	Alexander	Perineorrhaphy	x x Success.
8		Eldora	5-22-'01	Emergency Hosp.		Alexander	currentment	Examined a year later; uterus in perfect position; dysmenorrhea not entirely relieved.
9	Miss M. F.	Chicago	5-16-'02	Charity	Exaggerated retroversion; endometritis	Alexander	x Curretment	Success.
10	Miss A. McK.	Chicago	5-8-'02	Charity		Alexander		x x Success.
11	Mrs. L. E.	Illinois	5-26-'02	P. G.	Retroversion; lac. perineum	Alexander	Curetage; perineorrhaphy	Success.
12	Mrs. K. S.	Chicago	7-11-'02	Charity	Retroversion; endometritis	Alexander	Curetage	6-21-'03. Confined in normal labor.
13	Miss M. F.	Iowa	7-24-'02	Woman's	Retroversion; endometritis	Alexander	Curetage	12-23-'03. Writes: "Am a different woman."
14	Miss S. W.	Texas	7-23-'02	P. G.	Extreme dysuria; retroversion; endometritis; cystitis	Alexander	Curetage; examination of bladder	x Success. 12-12-'02. Examined in office; entirely relieved of symptoms.
15	Mrs. F. M.	Wyoming	11-15-'02	Woman's	Retroversion; endometritis; lacerated perineum	Alexander	Curetage; perineorrhaphy	6-'03. Success.
16	Miss M. E. S.	Illinois	1-17-'03	P. G.	Retroversion; no adhesions	Alexander	Curetage	x Success. 12-20-'03. Dr. P. writes: "In fine shape."
17	Mrs. P.	Ohio	6-16-'03	Woman's	Retroversion	Alexander	Curetage	12-20-'03. Examined in office; in fine condition.
18	Miss M. H.	Ohio	7-11-'03	Woman's	Retroversion	Alexander	Curetage	x Success.
19	Mrs. A. C.	Chicago	7-22-'03	Charity	Retroversion; perineal laceration	Alexander	Curetage; perineorrhaphy	x Success.
20	Mrs. M. K.	Chicago	10-9-'03	P. G.	Became insane during pregnancy; lac. perineum and lac. cervix; retroflexion and retroversion	Alexander	Curetage; trachelorrhaphy; perineorrhaphy	Success.

cases 3 and 4 are well three years after the operation, the latter of these also after confinement.

I have not found in this series, a single case where I was unable to find and draw out the ligaments, and no case in which I was unable to use the ligaments after finding and drawing them out.

I have no deaths to report in this series.

Between January 1, 1896, and January 1, 1904, I have operated on 79 cases by the Alexander method, and of these I have recent reports of 44; in this whole series there was one failure in the earlier cases to accomplish a tying of the ligaments because of one ligament breaking and in this case the ligaments were sutured to the external rings with silkworm gut sutures. In one case, also of the first series, the ligaments when exposed were so small that the Alexander was abandoned in favor of a ventral suspension.

To the seven cases of pregnancies reported in 1900⁶¹ I can now add three more of this series, making ten cases of normal labor in the first series, and these, with the two reported in the present series show a total of 12 pregnancies and normal labors out of the 79 operated cases, and this means, of course, twelve cases of pregnancy in the 44 cases from which I have been able to hear, or 27.4 per cent.

VIII. INTRA-ABDOMINAL SHORTENING OF THE ROUND LIGAMENTS.

*Gill Wylie*⁶² conceived this operation and published in May, 1889. Wylie exposes or scarifies the peritoneal surface of the ligaments and folds them upon themselves with the apex of the fold directed toward the side of the pelvis from which the ligament arises and the two arms of the fold are united with sutures to within a short distance of the uterus. He has reported many cases. His first operation was done in 1886. June 6, 1888, *Emil Bode*, of Dresden, described, independently, practically the same operation. In 1888,⁶³ *Polk*, of New York, described an operation for intra-abdominal shortening of the round ligaments, modifying Wylie's technique by crossing one ligament with the other and uniting them with sutures.

Matthew D. Mann, of Buffalo,⁶⁴ opens the abdomen in the Trendelenburg position and pulls the uterus to one side. The round ligament of the opposite side is then put more or less upon the stretch and rendered distinctly visible. The ligament is then

seized with two long handled hemostatic forceps, dividing the ligament into three equal portions. A needle threaded with silk-worm gut is passed through the loop nearest to the abdominal wall, and then passed under the point where the round ligament is inserted into the uterus. It is then made to grasp a considerable portion of the uterine tissue, the hemostatic is removed and the loop of ligament sutured to the uterus. The second suture is passed through the ligament just as it leaves the abdominal wall and then through the loop grasped by the hemostatic forceps nearest the uterus. This doubles the ligament upon itself in three thicknesses, and shortens it by the amount of the fold. The procedure is repeated on the opposite side.

In 1903, *Alexander H. Ferguson*⁶⁵ described an operation which he had already reported earlier, but had since modified, in which he utilized only the uterine end of the round ligament. He makes an incision in the abdominal wall three inches in length, the lower angle extending to the supra-pubic fold, and then dissects the fat and skin from the anterior sheath of the rectus muscle on either side of the abdominal incision to the extent of about one inch. An inch from the median incision he makes a stab wound through the rectus muscle, passes an artery forceps from without in, through this opening into the cavity, and with it seizes the round ligament and a portion of the broad ligament beneath it near the uterus. He drags the proximal end of the round ligament through the rectus muscle with the forceps already mentioned and secures it in position with sutures.

*D. Tod Gilliam*⁶⁶ describes an operation which is a modification of the Ferguson operation. The principle of the operation is the invagination of the proximal portion of the round ligament in the abdominal wall. The ligament is secured one inch from the uterus and a heavy silk thread is passed under it in such a manner as to include a little of the tissue of the broad ligament. This loop is not tied, but the two ends are brought out and secured in the bite of forceps. The same procedure is accomplished on the opposite side. He next thrusts a pair of perforating forceps from without inward, an inch from the median incision, through the aponeurosis of the muscle and the rectus muscle of each side, into the peritoneal cavity, seizes the looped threads and by this means draws the ligament through the perforations in the abdominal wall. While held taut, he secures them with a few cat-gut sutures. The exposed free loops of the ligaments are scraped and

tacked down externally and the opposite ligament treated in the same way.

In *Richelot's* operation⁶⁷ the ligaments are grasped at some distance from the horn of the uterus and bent down to the lower angle of the parietal wound, where they are fixed by several cat-gut sutures. The needles must be passed through the whole of the musculo-aponeurotic layer.

Robert Morris, in 1901,⁶⁸ describes an operation for shortening the round ligaments intra-abdominally, in which he draws out the ligaments from beneath the peritoneum through a small opening and sews the two arms of the folded ligaments together with chromicized cat-gut, after which he tucks the folded ligament back beneath the peritoneum and closes the slit.

J. C. Webster, also in 1901,⁶⁹ describes in most concise form an original operation for shortening the round ligaments intra-abdominally, which he accomplishes in the following way: A pair of pointed forceps is inserted from behind through a small hole made through the broad ligament on one side under the utero-ovarian ligament near the uterus and is made to grasp the round ligament about an inch from its uterine end. The latter is then pulled through the broad ligament in a double fold and carried back of the uterus a short distance above the utero-sacral ligament, and is then stitched in this position with chromic cat-gut. A similar procedure is carried out on the other side, the second ligament being stitched to the back of the uterus above or below the first one, or crossing it. Each ligament is also stitched to the edge of the hole in the broad ligaments. The operator claims that this operation can be equally well performed by vaginal section.

In 1902 *J. M. Baldy*, of Philadelphia,⁷⁰ did an independent operation which was but a modification of the Webster operation. His modification consists in severing the round ligament about an inch from the uterus after ligating the two free ends for hemostasis. With the forceps passed from behind, he grasps the free bleeding end of the severed round ligament until it protrudes on the posterior side of that ligament. The same thing is accomplished on the opposite side. The cut ends of the ligaments are now attached by means of sutures to the cornu of the uterus on the posterior aspect of the uterus, directly back of the original point of attachment on the anterior wall. Chromicized gut or silk is employed.

The principal advantages of the Baldy and the Webster opera-

tions are first, that the ligament is shortened parallel to its normal location, and second that it is accomplished subperitoneally. Third, that it is not relatively speaking a difficult operation.

In 1903 *G. H. Noble*⁷¹ described what he called an intra-mural extra-peritoneal implantation of the round ligaments. He makes a transverse incision one and one-half inches above the pubis through the skin, fascia, fat and the aponeurosis, down to the recti muscles. The incision is two and one-half to three inches in length. The recti muscles are separated vertically in the median line and the peritoneum opened in the same direction. Necessary inspection and repair work is accomplished. A pair of slight compression forceps, with teeth in the end, is passed through the abdominal opening and grasps one of the round ligaments about the middle of the intra-peritoneal portion. The ligament is put upon the stretch so that it may be recognized beneath the peritoneum. Just beyond the outer edge of the rectus, at the end of the transverse incision, the point of the pair of artery forceps is thrust through the posterior sheath of the muscle, but does not enter the abdomen. The forceps is then opened and withdrawn so that an aperture large enough to admit the index finger is left. The finger is introduced through this opening to the peritoneum and feels the round ligament without difficulty beneath, as it is made taut in the manner described above. The round ligament, with its covering, is hooked up with this finger, and drawn up into the wound. The sheath and the peritoneum are stripped back in the direction of the uterus, completely divesting the ligament of its covering. The opposite ligament is treated in the same way. If the loops are long enough to meet in the median line, the incisions through the recti muscles and the peritoneum are closed with cat-gut or kangaroo sutures. The folds of the ligaments are then approximated and tied together. The aponeurosis of the transverse incision is now closed with continuous kangaroo suture. The needle, in making this closure, included the ligament in its bite, and the superficial incision is closed.

In March, 1903, *F. F. Simpson*⁷² reported a very ingenious operation which utilized the strong uterine end of the round ligaments. The operation is as follows:

1. After the abdomen is opened the ligament is grasped by delicate forceps one inch from its uterine attachment and drawn to the surface.

2. A silk suture is passed through the ligament at this point

in such a way as to encircle about three-fourths of its circumference and include about one inch of that structure in its grasp.

3. The needle is taken off and both sides of the suture are passed through the eye of a blunt carrier.

4. The peritoneum is incised just below and in front of the round ligament. The carrier is then inserted and passed directly forward, immediately beneath the peritoneum of the vesico-uterine pouch, to a point on the anterior abdominal wall just above Poupart's ligament and an inch and a half to the side of the median line, where it again merges. Both ends of the suture are grasped and the carrier is withdrawn.

5. One end of the suture is now threaded on a sharply curved needle, which is passed into the abdominal wall, so as to grasp the peritoneum, muscle and fascia, again emerging into the cavity.

6. The other ligament is treated in the same way and the two sutures securing the two ligaments are tied.

May 2, 1903, *Byford*⁷³ presented a new operation for intra-abdominal shortening of the round ligaments, which consisted in folding the ligament upon themselves and securing the folded portion by sutures. The folded ligament is then drawn forward with the apex of the bend directed toward the opening of the internal inguinal canal. This is touched with some irritating fluid and then stitched to the parietal peritoneum near the opening of the internal ring.

IX. INTRA-ABDOMINAL SHORTENING OF THE SACRO-UTERINE LIGAMENTS.

J. Wesley Boëe, at the time he describes his vaginal method of shortening the sacro-uterine ligaments, also described an abdominal method for the same procedure.⁷⁸ In 1903 he makes a further report.⁷⁹ The operation consists in exposing the ligaments, folding the slack and obliterating it by sutures and then shortening the ligaments by sewing them at their center to the cervix.

*E. Stanmore Bishop*⁸⁰ described an operation for uterine prolapse which combined fixing the cervix intra-abdominally to the peritoneum or subperitoneal tissue posterior to the cervix in Douglas cul-de-sac with intra-abdominal shortening of the round ligaments. Silk is employed in the first procedure and the peritoneum is stripped off on the cervical side so as to get a sero-

connective tissue approximation. A staff in the vagina elevates the cervix and makes the operation possible.

A. P. Stoner,⁸¹ of Des Moines, Iowa, describes the technique of an operation for the intra-abdominal shortening of the sacro-uterine ligaments, as follows: (a) brings the uterus well forward after laparotomy incision. (b) This puts the sacro-uterine ligaments on the stretch when each is transfixed 5 cm. from its uterine attachment with a needle carrying a fine silk suture. Midway between the suture and the uterus, the ligaments are again pierced with sutures. (c) Slightly relinquish traction on uterus and make traction on the ligatures. The higher one is drawn down and anchored near the uterine attachment. The lower one is drawn upward toward the sacro-iliac junction and attached to its fellow. They are thus folded on themselves, as in Mann's operation, and united.

I have found no report of pregnancies following this operation.

X. VENTRAL SUSPENSION.

Suspension without abdominal incision was performed by Marion Sims⁸⁷ in 1859, and he had constructed for the purpose a special hollow needle traversed by a silver wire suture. He began the operation, but did not finish it, being impressed, evidently, with its dangers.

Kaltenbach⁸⁸ operated several times by incising the abdomen to the peritoneum and then, with the uterus pushed against the bottom of the wound, a silver wire suture was passed through the parietes into the fundus of the uterus and secured.

The excuse for so blind an operation passed with the appearance of clean surgery, and it should be mentioned only as an historical fact to be condemned.

*"Koeberlé,⁸⁹ from observing that the uterus was influenced in its position in the pelvis from the attachment of the tumor pedicles in the abdominal incision after laparotomies, conceived the idea of fixing a portion of the uterus or its appendages in the abdominal incision as an operation of election for retrodisplacement of the uterus, and he was consequently the first to execute such an operation, when, on March 27, 1869, he stitched the pedicle of an incised ovary in the lower angle of an abdominal incision.

*Quoted from previous article.

"*Sims*,⁹⁰ in February, 1895, cured a patient with a persistent, painful, retroflexion, by practically the same operation as that employed by Koeberlé. *Schroeder*⁹¹ reported in 1879 a similar operation. In February, 1880, *Lawson Tait*,⁹² on closing an abdominal wound, after removing the appendages, in a case complicated with retroversion, allowed the sutures employed for closing the abdominal incision to include the fundus of the uterus, and thus deliberately accomplished ventral fixation. This case and another done in April, 1880, were reported as cured in 1883. *Sänger*⁹³ reported that Hennig performed this operation in 1881.

"The operation of ventral suspension of the uterus will be always inseparably connected, however, with Ohlshausen, of Berlin, and our own Kelly, of Baltimore, for having the genius of proposing, executing and describing a systematic operation. *Professor Ohlshausen*⁹⁴ was fortunate in publishing first. *Kelly*,⁹⁵ while having the subject under consideration for some time and operating, did not publish until January, 1887."

*Leopold*⁹⁶ and *Czerny*⁹⁷ made a central suspension of the uterus by suturing the fundus directly to the abdominal wall at the point of abdominal incision.

As the operation became common and time demonstrated some of its advantages, *George R. Fowler*,⁹⁸ in 1895, substituted the urachus as a suspensory ligament of the uterus, in order to obviate the use of permanent dead suture material. While Fowler's operation did away with the dead suture material, it made a too firm suspension and endangered the patient in case of pregnancy.

In 1896⁹⁹ I devised an operation of ventral suspension, adopting the auto-plastic principle of Fowler, but modifying it by employing a strip of peritoneum to make the suspensory ligament, and thus insured the most superficial and movable union, making it particularly adaptable for cases in which pregnancies were possible.

(To be continued.)

THE PREVENTION OF POSTOPERATIVE INTESTINAL PARESIS AND ADHESIONS.¹

BY

DANIEL H. CRAIG, M.D.,

Surgeon to Out Patients, Free Hospital for Women; Instructor in Clinical Gynecology, Tufts College Medical School; Instructor Boston Polyclinic, etc., etc.
Boston, Mass.

THERE seems little need to expatiate upon the superiority of prevention as compared with cure. A superficial glance at all modern medical literature will convince anyone that the most energetic workers throughout this branch of science are concentrating all their efforts in this field of labor. And this strenuous labor is being done that a possible illness, or even a possible complication, may here and there be averted. How much more then is it incumbent upon us to prevent not a possible, but a probable and well-nigh certain effect of the opening of the peritoneal cavity. For it has been rare indeed that the abdominal cavity has been opened without more or less seriously interfering with the motor function of the bowel, and if deaths have been few from this cause it has been because no abdominal surgeon has felt at ease until, by careful medication, he has secured evidence that intestinal peristalsis has been restored. And I use the word restored advisedly, because, under the calomel and saline régime which has been so commonly, I might almost say universally, employed it is seldom indeed that the patient has escaped the pain incident to intestinal paresis and its resultant meteorism. Indeed that such should be the case is inevitable, for is not the stomach a necessary factor in this form of treatment?

It is always several, and often many, hours before the stomach, irritated by the elimination into it of the ether, can be used for medication of any kind and the mild chloride of mercury given too soon by the over-anxious surgeon or nurse, is a potent factor in the prolongation of this irritability.

There are few instances in which a certain danger can be so definitely foreseen as can postoperative intestinal paresis, and it

¹Read, by invitation, at the Semi-Annual Meeting of the New Hampshire Surgical Club, Concord, N. H., March 24, 1904.

therefore should offer exceptional opportunities for rational prevention.

Notwithstanding the most careful, energetic and, in some instances, most heroic treatment, postoperative intestinal paresis has remained one of the dangers in celiotomy and many patients are relieved of their original condition only to be finally in a condition of greater or less discomfort as the result of peritoneal adhesions; and here permit me to remark that I know of no operation which I undertake with greater trepidation and with less confidence in its ultimate results than the secondary operation for the removal of adhesions resultant from an earlier operation.¹

My only fatal case of postoperative intestinal paresis occurred in May of 1901, and it so impressed me with the impotence of the surgeon in the presence of such an accident that from that time to the present I have never ceased working at the problem which now seems in process of solution. I say in process because in this paper I shall attempt only a preliminary report and shall reserve all statistics for further report later.

To prevent any occurrence it must first be thoroughly understood. It was therefore first necessary to understand how and why celiotomy produced the paresis. This question is entirely elucidated by the peculiar anatomy and physiology of the intestine. With both the anatomy and physiology of the intestine every one here is familiar in a general way, and assuming this I shall only intrude upon your time those facts not so generally known.

Anatomically we have to do with the longitudinal and circular coats of unstriped muscles with Auerbach's plexus of nerves between them and Meissner's plexus inside the circular coat. The unique effects produced upon the intestine by its exposure to the irritation accruing from the lowered temperature, and manipulation incident to celiotomy is largely owing to this peculiar nervous anatomy. The intestines, while unquestionably influenced both as to motor and vaso-motor conditions by the central nervous system, through the splanchnics and vagi, are none the less essentially autonomous. It has many times been experimentally demonstrated that the ganglia comprised in Auerbach's and Meissner's plexuses are fully capable of complete reflex functions, so that perfectly normal motor equilibrium is easily and permanently maintained after complete severance of every slight-

¹See report of case in paper by the author on "Splanchnoptosis Caused by Omental Adhesions." American Med., Sept. 12, 1903.

est connection with the central nervous system. However, it is probable that in the human celiotomy patient we are dealing with a much more complex problem than in animals under experimentation, for it seems probable that the chilling and contact irritation cause an excitation of the splanchnics, which creates powerful reflex spinal inhibitory impulses while it at the same time produces a degree of over-stimulation of the intrinsic reflex ganglia which results in speedy exhaustion.

Bayliss and Starling,¹ who have very recently thoroughly investigated this subject, say: "The tendency of physiologists during the last thirty years has been to deny to peripheral ganglia, or collections of ganglia, any reflex function at all comparable to those possessed by the brain and spinal cord—functions, that is to say, which include co-ordination as well as mere reflexion of impulses. The facts we have brought forward, however, show beyond doubt that the local nervous structures in the gut have this power of co-ordination, of directing one kind of influence along one path, and another kind of influence along another path, the result being a 'purposive' response directed to the propulsion of the food down along the alimentary canal. Auerbach's plexus is, in fact, a local nervous system with two reflexes, inhibition and augmentation, and one function, the propulsion of food." The two reflexes, acting in co-operation, give rise to the phenomena which constitute the basis of what is known as "The Law of the Intestine," namely, "If cerebro-spinal reflexes be excluded, excitation at any point of the gut excites contraction above and inhibition below." In normal human beings under operation, however, the splanchnics and vagi are still operative, except in so far as they may be affected by air, temperature, trauma and anesthetic, and the problem is therefore less simple. The most marked influence exerted by the central nervous system through these nerves seems, to be limited to the control of the vaso-motor influences and the more distinct control of the ends of the alimentary canal, as, for example, in swallowing and defecation. Courtade and Guyon² say, however, that contraction and dilatation of the two muscular coats determined by stimulation of the splanchnics are entirely independent of any vaso-motor influence; being the same whether the vagus is cut or its peripheral end stimulated. More-

¹Bayliss and Starling. "The Movements and Innervation of the Small Intestine." *Am. Jour. of Physiology*, Vol. 24, p. 99.

²Courtade and Guyon. *Archives de Physiologie*, 1897.

over, according to Bayliss and Starling¹ the splanchnics are bearers of tonic inhibitory impulses to the intestine. "These inhibitory impulses are reinforced by reflex inhibitory influences dependent on stimulation of the sensory nerves." This last sentence, taken in conjunction with the following quotation from the same authors, namely, "The most striking method of producing reflex inhibition is stimulation of the intestine itself. If one or both splanchnics be intact the slightest stimulus applied to the intestine, even a gentle handling of the gut, suffices to produce a reflex inhibition of the whole length of the intestine," shows quite clearly how intestinal paresis may result from the most simple exploratory celiotomy in the hands of the most expert. Mall,² moreover, shows that this inhibitory influence of the splanchnics is superfluous as the contractions of the intestine continue independently of the central nervous system; the walls are filled with systems of nerves which, no doubt, perform functions independent of even the solar plexus. "We may admit that the whole intestine lives, to a slight extent, quite an independent life."

The foregoing shows quite abundant cause for paresis and yet it is possible that there are still further causes active during celiotomy, for Dastre and Morat³ say that asphyxia causes intestinal anemia (hence lessened intestinal activity), and restoration of oxygen produces the inverse effect. Therefore, it is quite possible that a prolonged or too profound anesthesia may play a certain rôle in intestinal paresis. Then too Mall⁴ has shown that peristalsis is more active after a meal and at rest during the night, therefore the pre-operative cleansing of the intestinal canal favors paresis by removing the natural stimulus of intestinal contents. Various investigators have proved that when normal muscular action may be perverted in localized areas of the intestine whether it be as spasm or relaxation, or both, in different areas, nothing so quickly re-establishes the normal rhythm of both the pendulum and propulsive mechanisms as the establishment of the normal peristaltic wave in the normal portion of the gut. Under this influence the spasm will relax and the dilated bowel contract.

One further point only. Postoperative paresis is probably due to a dual influence: Inhibition due to a stimulation of the splanchnic fibres and exhaustion due to over-stimulation and hence fatigue

¹Loc. cit.

²Mall. Johns Hopkins Hosp. Reports, Vol. I, p. 37, 1896.

³Dastre and Morat. Archives de Physiologie, 1882 to 1884.

⁴Loc. cit.

of the ganglia in Auerbach's and Meissner's plexuses. To regulate peristalsis we must then counteract the stimulated spinal reflexes acting through the splanchnics and restore the energy to the intestinal nerve endings and muscles. In a word this constituted my problem.

My first efforts were directed to the trial of various salines after the operation. Not because one was really better than another, but because, for some unexplainable reason, abdominal surgery and salines have always been intimately associated with each other ever since the surgical fraternity espoused the "open" treatment of peritonitis as against Clarke's "closed" treatment. At that time surgery and salts became wedded, at least in the minds of most students. I soon became satisfied that salines after the ordinary celiotomy, in which the intestinal tunics were not themselves injured, were irrational.

In experimentation it has been found that the best of all methods for exciting normal peristalsis is by means of a bolus of some non-irritant material placed within the lumen of the intestine itself. But in these cases the ganglia of Auerbach's and Meissner's plexuses are not exhausted and the splanchnic inhibition had been carefully excluded by most delicate dissections. It is, however, upon this bolus-like stimulation that the users of salines depend, because the action of the salines is to determine by osmosis large volumes of fluid to the intestinal lumen, which fluid, by its presence, mechanically excites peristalsis. In other words, it is calling upon the already over-excited, and thus exhausted nerve terminals to respond to further excitation with the inevitable result that in certain cases it not only fails, but in so doing so increases the exhaustion as to make later resort to more powerful excitants of peristalsis unavailing.

Indeed, it is a well known fact that salines were originally chosen because they accomplished a maximum of intestinal evacuation with a minimum of intestinal peristaltic agitation.

Before relinquishing the use of salines, however, it seemed important to know if this minimal peristalsis in any way conduced to the ultimate well-being of the patient. The result of study along this line was to convince me that minimal or prevented peristalsis was probably an essential during a few hours after operations upon and involving the gut itself; not otherwise.

Discarding salines then, my first attempts were directed along the path pointed by Murphy, who long ago advised the administration of six drachms of the fluid extract of cascara sagrada a few

hours before operation. My first few cases under this régime were complete failures, requiring resort to postoperative salines, because I lacked the courage to use the cascara in such seemingly heroic doses. After these failures, however, the dose was increased to five or six drachms, according as the patient gave a history of being easily, or with difficulty, influenced by cathartics, and several cases gave most gratifying results, the bowels moving freely within from twelve to twenty-four hours after the operation without the least griping or discomfort and without necessitating the taking of nauseous mercurials, either by mouth or enema, at a time when, owing to the gastric elimination of ether, the stomach was in a highly intolerant condition.

This routine, however, had serious drawbacks. When called upon for an emergency celiotomy, for instance, in a ruptured ectopic gestation, no time existed in which to set this *modus operandi* in motion. Then, too, it did not act equally and sometimes, though not often, failed to act at all. In some instances, apparently owing to the high degree of nervous tension under which the patient was laboring, the cascara remained from one to three hours in the stomach without being absorbed, and at the first emesis in going under ether the cascara was vomited, in which case it, of course, exerted no influence, but worse still, the patient had been subjected to the ordeal of swallowing and ejecting a large intensely bitter draught all for naught. Furthermore, on several occasions, on opening the abdomen, the intestines, in cases entirely free from peritonitis, were found injected and reddened, showing that the large doses of cascara had produced irritation. Last, but by no means least, was the fact that its administration seemed contra-indicated in those cases in which there seemed the least possibility of encountering intestinal adhesions, the breaking down of which might so far injure the intestinal wall as to render temporary rest desirable.

It was while I was thus equally dissatisfied with calomel and salines, postoperative, and cascara, preoperative, that the late Dr. Frederick A. Packard¹ unconsciously came to my aid. He reported a number of extreme cases of intestinal atony entirely and promptly cured by the use of eserine (physostigmine) salicylate.

Such a drug, if found suitable, would ideally fulfil the conditions which cascara left to be desired. No time was needed, as it

¹Packard. "A Possible Cause of Meteorism and Partial Intestinal Obstruction, with Remarks on the Use of Eserine in Intestinal Atony." Phila. Med. Jour., May 24, 1902.

action would be prompt (fifteen minutes to one-half hour after hypodermic administration); it need not be swallowed by a nauseated patient into an ether-irritated stomach; it need not leave the intestine in its parietic condition from eight to forty-eight hours, all the time being rendered more and more difficult to arouse because of the overstretch of its circular fibres due to meteorism; if no adhesions or other menace to intestinal integrity be found it could be administered before the patient left the operating table.

On investigating eserine salicylate I find that many authorities in *Materia Medica* and *Therapeutics* have little to say regarding this active principle of the time-honored Calabar bean. Wood¹ classes it as a spinal motor-depressant. As to its physiological action he says: "It has no apparent local irritant action in therapeutic doses. Absorption and elimination are rapid, the latter principally by the kidneys. No sensible general effects are perceptible after full therapeutic doses of Calabar bean, except it be slight weakness and dislike for muscular exertion." He further says: "The physiological action of Calabar bean has suggested its use in spasmodic affections, *in atony of the muscular coats of the bowel*,² and in various diseases of the eye. *In constipation dependent upon muscular relaxation and as an addition to laxative pills we have found it very useful.*" A. Hiller strongly endorses the value of the extract in *chronic intestinal atony*,² after or during a catarrh, in the convalescence from fever, etc., and *in constipation with flatulence, in meteorism*,² etc. One thirtieth of a grain of either alkaloid may be considered to be the full therapeutic dose." Of seventy children accidentally poisoned only one died. "Intestinal peristalsis is primarily much increased by the action of Calabar bean. After poisoning there is at first a stage of exceedingly active movements in the bowels; then spasmodic tetanic contractions of the intestine occur so that the calibre is very much diminished and finally relaxation and dilatation takes place. After death the vermicular movements are found very much lessened or altogether abolished. The action of Calabar bean upon the intestine appears to be peripheral, due to the contact of the poison in the blood with the muscle fibres or the nerve elements in the walls of the bowel, for Westermann found that extirpation of the cardiac ganglion had no effect upon the action of the drug, but that tying the mesenteric and celiac arteries, before poisoning, prevented any increase in peristalsis.

¹H. C. Wood. *Therapeutics*. Eleventh Edition; p. 223.

²The italics are mine.

Probably there is an increase of the intestinal secretions." He further refers very fully to the literature of the subject, so that quotations from other authors would accomplish little but needless repetition.

On studying the therapeutic and clinical side of the question I find that nearly all of our most renowned clinicians speak in high commendation of eserine salicylate in the treatment of atony of the muscular coats and also that it is even more extensively spoken of by European writers, notably by Oppenheim, Fraser and von Noorden. This latter author is the only one who has recorded the use of eserine as a remedy for postoperative paresis, but he reports so using it, with perfect success, after numerous other remedies had failed.

I have used the salicylate of eserine subcutaneously, in each instance because it is the most easily handled. The sulphate is so soluble as to be deliquescent, and therefore rapidly deteriorates. Neither the sulphate nor salicylate keeps well in solution, but soon deteriorates and turns reddish or yellowish. The tincture or extract of physostigmine itself is inferior to eserine because they both contain calabarin, the other active principle, which has an unfavorable, depressing, spasmodic, tetanizing action.

On reviewing these qualifications it was seen that eserine quite met all the demands. While Calabar bean has long, owing to its use as an "ordeal bean," been considered dangerously poisonous, it is no more so than many drugs in daily use, such as strychnine or pilocarpine when used in therapeutic dosage.

Being classed as a spinal depresso-motor it is seen at once that through this action it is able to counteract the spinal reflex inhibitory impulses carried to the intestine by the irritated splanchnics.

Acting as it does, either upon the unstriped muscular fibres themselves, or the nerve endings in them, it is able to restore lost vigor there and so overcome both sources of the intestinal paresis.

Then too, since it is administered on the operating table, it acts so promptly as to prevent paresis, gaseous fermentation, stasis and distension, which weaken the muscles, instead of as formerly, permitting this chain of symptoms to become more or less fully established, according to the time allowed to elapse, either in the following of a routine, or in awaiting the moment when the stomach can tolerate calomel.

Eserine salicylate has been administered both to my private

patients and to patients under my care at the Free Hospital for Women in doses ranging from one-sixtieth to one-fortieth grain. The dose to be selected is determined by learning the individual tendency of the patient to respond to cathartics. I have not found doses of more than one-fortieth necessary, although slightly larger doses have been used with no untoward effects.

In some cases after its use the bowels move spontaneously within the first twelve or twenty-four hours, but in others no such movement occurs. I was at first puzzled by this occurrence and in fact the first time it occurred a little alarmed, for while the patient was bright, and her temperature and pulse were all that could be asked, she seemed almost suspiciously comfortable. However, as the abdomen was soft, not in the least distended, and inasmuch as borborygmus was plainly audible at intervals of a few moments, I decided to await developments. I administered two A. B. & S. pills on the evening of the day following the day of operation and the bowels moved easily and naturally early the following morning. A little thought explains this. This patient, and others who have since shown the same conduct, had been in the hospital thirty-six or more hours previous to operation, and their intestinal canals had been thoroughly and completely emptied and as liquid diet, without milk, had obtained for at least twenty-four hours before operation, there was not enough material in the bowels to distend the descending colon and rectum and thus produce defecation. That such distension is an essential factor in exciting the impulses which result in defecation has been shown by Cannon's¹ recent investigation of the intestinal movements by means of the X-ray. And, too, eserine does not, like the salines, withdraw from the patient's own body the necessary material for such a movement, which fact is, I think, strongly to be commended. Postoperative patients need to be generously supplied with fluids, not to be robbed of them. How soon then the bowels move spontaneously will depend, not so much upon the activity or dose of the eserine as upon the thoroughness of the preoperative intestinal preparation. To my mind then, the indication that eserine alone was either insufficient or inactive would be the absence of peristaltic action, as shown by the inability of the nurse to hear it or the patient to feel it, together with beginning intestinal distension. This was seen after some of the smaller doses, but an enema of salts, suds and glycerine promptly secured an

¹Cannon. "The Movement of the Intestines Studied by Means of the Roentgen Rays." *Am. Jour. of Physiology*, 1902.

efficient action. Further study of this point convinces me that beginning intestinal distension, together with nausea and vomiting, in a word the ordinary symptom complex of intestinal paresis, constitutes a much more trustworthy guide to the efficiency or inefficiency of the eserine than does perceptible peristalsis, for we all know how seldom normal peristalsis is either audible or perceptible. I have therefore grown to feel that so long as the patient's abdomen is soft, presents no abnormal tenderness, and no distension, it is safe to rely upon this as sufficient indication that all is well. Distension, even of a slight degree, seems to be entirely lacking after proper doses of eserine, probably, as Wood suggests, because it increases the intestinal secretions which completely inhibit fermentation.

All this time nothing has been said about postoperative adhesions. Adhesions form by the gumming together, by inflammatory exudate, of two contiguous, congested, irritated or abraded peritoneal surfaces, but for such agglutination rest is an essential factor. Hence the very active peristalsis immediately established by the eserine must do far more to inhibit the formation of such adhesions than can possibly be accomplished by any dusting-powder or foreign membrane and without throwing additional work of absorption upon an already overtaxed peritoneum.

And this effect of the peristalsis can be materially enhanced by the leaving within the peritoneal cavity of a moderate quantity, say about a litre, of sterile normal salt solution, thus enabling the coils of intestine to float up away from any abraded surfaces low down in the pelvis and to glide more easily over each other. That this salt solution may not be too rapidly absorbed the abdominal binder should either be omitted or applied very loosely, reserving a tight binder for those cases in which rapid absorption is desired to replace fluid lost through hemorrhage. Personally I close all undrained wounds with buried sutures in tiers, apply a firm layer of thoroughly flexible collodion and dispense with the binder.

In addition to the above, unless special contra-indications exist, patients are turned by the nurse every half hour until peristaltic rumbling is heard, and the patient is encouraged or assisted to turn herself frequently as soon as she has recovered consciousness.

But one point remains to be considered. This use of eserine is entirely new, and while I feel that my experience justifies me in heartily recommending it to your favorable consideration I wish

also to add what I have been able to learn about the counter-action of any untoward effects it may yet have to manifest.

Belonging, as it does, to the same group with pilocarpine, its natural physiological antidote is atropine. And this, for our purposes, is fortunate indeed in many ways. First, because, like the eserine, it is best used hypodermically and should untoward symptoms manifest themselves before the patient has recovered her ability to swallow, the antidote may still be promptly administered. Second, the action of atropine and eserine are antagonistic in every respect *except that both in small doses stimulate peristalsis*. By small doses I mean ordinary, therapeutic doses. Third, because nothing better prepares a patient for anesthesia than small doses, 1-150th or 1-200th grain, of atropine sulphate, either one hour (by mouth), before anesthesia or subcutaneously immediately before. It stimulates the heart and, more important still, lessens pharyngeal secretion so that anesthesia is much less troublesome. Many have objected to so using atropine, on the ground that the throat remained abnormally dry during the patient's recovery from ether, thus aggravating the patient's thirst. Eserine, however, exerts just enough of the action so familiar with pilocarpine to render the throat freely moistened.

I am certain that anyone who may adopt this method of treating celiotomy patients will, above all else, be profoundly impressed with the great comfort and general well-being of the women, as compared with the hours of distress, with greater or less abdominal distension, to which we have become accustomed while awaiting the ability of the patient to take cathartics by mouth. Certainly patients, of whom I have seen two, who have had operations done under the old method, and that herein suggested, appreciate the difference. The only discomfort thus far experienced has been a rather severe epigastric pain in two patients which yielded promptly to codeine sulphate, half grain, by mouth; the codeine interfering with peristalsis far less than morphine. I have included this epigastric pain as a possible result of the use of eserine because it has in each instance been a decidedly severe pain and I do not wish, through over-enthusiasm, to underestimate any disagreeable effects which may be justly charged against the eserine. Sincerely, however, I believe that the eserine had nothing to do with the pain. I attributed it rather to a prolonged maintenance of the Trendelenburg posture in difficult operations. And I am not alone in this opinion of the effects of

this posture, for Kraske,¹ von Eilenberg² and Trendelenburg³ himself, each reported to the last session of the German Surgical Congress cases of gastric hemorrhage as the result of the Trendelenburg posture.

The fact of its occurrence in so few instances further confirms this view. Moreover, in the vast majority of the cases the stomach convalescence was unusually easy and vomiting was either very slight or absent. Then, too, this form of epigastric pain has often been observed under the old régime. My impression from watching the cases has been that the prompt peristalsis favored the passage of gastric contents promptly in the normal direction, with consequent relief to the stomach.

One other fact gave me a little concern in my first cases, and that was that, inasmuch as the general abdominal cavity, not being at all distended, was not in the least painful the patient paid much more attention to the wound and complained more of it than I had been accustomed to. But the facts that this complaint was always of a soreness on moving, not of a steady or throbbing ache, and that the wound at all times appeared to be progressing normally toward a first intention, led me to believe that the wound was only more painful because she had not more severe pain elsewhere. All undrained wounds have healed by first intention.

CASE I.—Mrs. G. E. O. Private patient. Celiotomy. Both ovaries freed from very firm adhesions of long duration, involving both broad ligaments, tubes, Douglas's fossa and the peritoneal coat on the posterior surface of the uterus. Resection of the left ovary and right tube. Suspension of right ovary and remaining portion of the left by shortening the ligamenta propria. A badly inflamed appendix removed, involving the breaking down of numerous adhesions. Many adhesions involved the intestine, but this latter was not at all injured in their liberation. Was in Trendelenburg posture, about thirty to thirty-five minutes. Before leaving the operating room eserine salicylate, one-fortieth grain, was administered hypodermically. Returned to bed at 11:35 A.M. First rumbling of intestine noted by nurse at 4:50 P.M., although Mrs. O. claimed to feel intestinal motion as soon as she recovered consciousness. At 6:30 P.M. complained of severe epigastric pain. Hot applications and mustard to the epigastrium failing of relief, codeine sulphate, half grain, was given

¹Proceedings of the German Surgical Congress, 1903.

²Ibid.

³Ibid.

by mouth at 8:30 P.M. Relief prompt. Slept five hours during the night. Bowels moved voluntarily at 11:10 A.M. on the day following operation, and once each day subsequently.

There was at no time distension sufficient to fill out the binder applied on the operating table. Was given liquids generously during the first two days, semi-solids on the third and house diet on the fourth.

CASE II.—Mrs. S. Private patient. Dilatation, curettement, trachelorrhaphy, perineorrhaphy and celiotomy. Left ovary removed and right ovary and both tubes freed from adhesions. Appendix, gall bladder and right kidney explored. Eserine, one-fortieth grain, administered on operating table at 10:45 A.M. First peristalsis audible at 11:15 A.M. No nausea or vomiting. Bowels moved voluntarily at 7:45 A.M. on day following operation and again later in the same day. One A. B. & S. pill was administered that night and the bowels moved five times during the next twenty-four hours. Later convalescence entirely uneventful. No medicine for the relief of pain and none desired by the patient.

CASE III.—Mrs. R., at Free Hospital for Women. Celiotomy by Dr. Reynolds. Eserine salicylate, one-fortieth grain, at 4:25 P.M. First audible peristalsis recorded at 5:00 P.M. No abdominal pain nor distension. Nausea and vomiting slight. Although the abdomen remained unusually comfortable, soft, and flat, no gas was expelled and no movement occurred, and a simple suds enema was given by the nurse forty-six hours after the operation through a misconstruction of the orders, as this was the first case so treated at this hospital. The bowels moved easily each succeeding day and convalescence was in every way normal.

These three cases have been chosen to report thus briefly because they illustrate, first, the epigastric pain above mentioned; second, a perfectly comfortable and uncomplicated convalescence with voluntary bowel evacuation, and third, the lack of such voluntary evacuation, which I attribute to the very unusually thorough bowel preparation which constitutes an essential part of the preparation for operation of all patients in the Free Hospital for Women.

THE BODY DEFENSES AND SYNCYTIOMA MALIGNUM.¹

BY

JOSEPH McFARLAND, M.D.,
Philadelphia.

To an audience to whom the occasional mysterious occurrence of syncytioma malignum has been of interest since it was first observed, and by some of whom cases have been reported, it would be a supererogation to review the now well-known morbid anatomy of the condition, and in accepting the invitation to address your society this evening, I hope to interest you in some theoretic considerations by which we may attain to a partial understanding of the strange phenomena of the disease.

It is to be understood from the start that we are to deal with purely theoretic considerations, and will attempt to build up a hypothesis to account for the development of the tumor, if such it can be called.

Life's manifestations are all mysterious, and we are still unacquainted with the forces that act and react upon the cells of our bodies. Many are hinted at in such vague expressions as "hereditary tendencies," "trophic influences," "organic influences," and at times we speak confidently of what are in reality nothing but names. We do not know what kind of stimulation is imparted to an ovule by the spermatozoon by which it is fertilized, yet its profound influence is evidenced by the inherited peculiarities of the resulting individual.

It is clear to every biologist and physiologist that every cell of the higher animals is subject to many subtle influences, and while it may not be astonishing to the morphologist that the tissues and organs of our bodies should be normally disposed, it is most astonishing to the biologist and the embryologist that such uniformity and regularity exists. What is it that determines the differentiation of the blastodermic layers? Why do the cells of these layers form groups from which organs are subsequently evolved? Why are certain of the cells set aside as reproductive elements? We do not know?

¹Read before the Section on Gynecology of the College of Physicians and Surgeons.

Embryology is a continuous series of surprises, and the common assertion that all of the differentiations of the developing embryo take place in consequence of inherited tendencies and co-operating forces, explains little.

But the embryo is not alone peculiar in the extraordinary behavior of its tissues. Those of the adult behave toward one another like the individuals of a well-organized social system, each attending to its own business, each maintaining its own integrity without trespassing upon, invading or disorganizing any other group. Indeed, those conditions in which the accidental invasion of one tissue by the elements of another, or in which the excessive activity of one organ occurs to the disadvantage of others, or the extinction of one organ to the disadvantage of the whole body, mark so distinct a departure from the normal as to constitute the essence of what we call disease.

Did it ever strike any one as peculiar that the epithelium of our skin, which is a tissue of active vegetative power, remains as a superficial covering of the body, and that its multiplying cells grow outward and upward to replace those removed by attrition instead of downward and inward to disorganize the subjacent tissue? What determines this relationship of epithelium to connective tissue, and why does it never overstep the boundary of its *membrana propria*? Is it not still more remarkable that in the looser and more delicate tissue of the organs, the cells maintain their definite relationship one to another, and to the *membrana propria*, instead of extending haphazard into the neighboring interstitial tissues? What determines these relationships, and why do they persist throughout life? Is it not remarkable that the chorionic villi shall extend into the decidua only far enough to bring their blood sinuses into proper coaptation to the decidual sinuses, and that this actively developing embryonal tissue shall perfect a certain development which is followed by its decline and subsequent disappearance? What determines that?

It is impossible to conceive that mechanical conditions shall determine such subtle relationships as we find between the tissue elements throughout our bodies. We are, therefore, obliged to look for some new explanation.

Physiologic chemistry seems to have the key to the situation in her hand, but we still stand upon the threshold, the door of knowledge being but ajar. According to recent discoveries, certain organs of our bodies furnish secretions by which growth is governed, yet the actual influence of these substances is vaguely

understood. It seems well established that the secretions of the pituitary and thyroid bodies exert regulating influences upon nutrition, and that their deficiency or excess is followed by such abnormalities as myxedema, cretinism, and acromegaly.

The importance of less well-known internal secretions is made evident by the removal of certain organs not supposed to be of importance to the general welfare. Such mutilations frequently transform the whole being, as, for example, in cases in which the sex glands are removed. Conditions at one time conceded to be reflex, or to be governed by the trophic or sympathetic nervous system, are now viewed from totally different standpoints, although only the foreshadowings of their real nature are known to us. The development of the mammary gland in anticipation of lactation may possibly have some connection with an internal secretion prepared by the cells of the corpus luteum, and, indeed, this very unique body, the corpus luteum, may prepare other substances whose stimulating action upon the cells of the body brings about other obscure changes characteristic of early pregnancy.

The studies of immunity that have engrossed the attention of experimental pathologists during the last five years, have shown a remarkably complex constitution of the blood, and an astonishing number of substances which act and interact in indemnifying the body against invasion by parasites and by its own cells.

To review briefly these discoveries, I must first remind you of the old observations of Nuttall, Buchner, and others, that normal blood-serum was not infrequently fatal in its action upon bacteria, and that some cases of immunity from infection may be explained through this poisonous—that is, defensive—action of the juices. Later it was shown that when animals were experimentally immunized against various bacteria, this ability of the blood-serum and body juices to destroy the microorganisms sometimes increased, so that bacteriolysis became a recognized, though inconstant phenomenon of immunity.

It had long been known that in the transfusion of blood the alien corpuscles introduced into the circulation speedily disappear, though their disappearance could not be satisfactorily accounted for, and it remained for Ehrlich and Morgenroth, Von Dungern, and others, to show that the disappearance of foreign corpuscles from the blood depended upon the combined action of certain factors which Ehrlich called “amboceptor” and “complement.” The publication of this paper by Ehrlich and Morgenroth was

the starting point of an immense amount of research and speculation, which has resulted in a fairly complete elucidation of the defense of the body through the destruction of invading cells.

The mechanism by which bacteria and other parasites are destroyed by the body juices, and by which heterogeneous blood-corpuscles and tissue cells introduced into the body are disposed of, is almost identical, and in all cases depends upon the combined action of solvent substances normally present in the juices, and variously known to different writers as the "alexin," "cytase," "lysin," "complement," and intermediate substances, which have been called "amboceptor," "immune body," "intermediate body," "fixateur," "desmon," and "substance sensibilisatrice."

The first substance, the so-called *lysin*, which will perhaps be the most convenient term for us to use in the speculation that is to follow, seems to be a comparatively invariable quantity; while the second, the *amboceptor*, varies according to the power of the individual to defend itself. Thus, in animals that have acquired the ability to defend themselves against invading cells of any kind, the specific amboceptor is greatly increased, while the *lysin* remains practically the same.

It is useless in our present speculation to enter into a discussion as to the specific or non-specific nature of lysins. Their existence is a matter of demonstration, and their mode of action one easily learned by a few simple experiments. That lysins with solvent powers for certain cells of the organism, in whose body they are formed, circulate in the blood is shown by the studies of *ephrotoxin* made by Pearce.

We now pass to the consideration of certain experimental manipulations, by which animals injected with various products, elaborated in the bodies of other animals—products which may more or less seriously and injuriously affect them—defend themselves. For example, under normal conditions an animal requires what we will describe as a normal quantity of complementary substance—lysins—in its blood. But if such an animal is frequently injected with lysin-containing blood from another animal, it proceeds to antagonize or inhibit the action of the foreign lysin by producing an antagonistic substance, whose presence is capable of demonstration and which is known as an anti-lysin. Or, should the animal be frequently injected with serum containing an excess of amboceptors, it elaborates anti-amboceptors, by which their action may be annulled.

There is indeed, evidence to show that the introduction of

almost any active foreign substance into the body, is followed by a defensive reaction of some kind, and that almost any substance normal to the body, introduced into it in excess, will bring about a reaction counteracting what damage its excessive presence might do. These reactions may be described as "general reactions," that is, reactions depending upon substances contained in the blood and tissue juices, and presumably common to all parts of the individual. But in addition to these defensive reactions are others, much less well understood, many of which are local. Such reactions probably account for the failure of growth and absorption of the grafts that have followed so many endeavors to reproduce malignant growths by the transplantation of tumor tissue from animal to animal. The mechanism of these defenses is, however, so complicated that it is difficult to say just what factors are general, and what are local of the reactions that take place. A consideration of tissue-transplantation cannot fail to impress us with the regularity with which certain results come about. A regularity which must occur in conformity with some law, the nature of which we have not yet succeeded in completely formulating.

Grafts of adult tissue, when transplanted into an abnormal environment in our own bodies, or in the bodies of the lower animals, disappear by absorption; that is to say, their cells shortly die and are dissolved or digested and disappear. In this process of absorption the leucocytes are active; but to my mind it is very doubtful whether the rôle of the leucocyte is as important as Metchnikoff and his followers would make it. Certain peculiar exceptions present themselves; thus Cohnheim was the first to observe that when fragments of periosteal tissue were transplanted, they were transformed into thin plates of bone which remained for a considerable time, and then were absorbed. It would seem, therefore, that periosteal tissue has cells whose activity is less easily overcome than other cells, and which for a short time perform their normal function under the disadvantageous surroundings to which they sooner or later succumb.

The vegetative activity of embryonal tissues suggests that their transplantation might be followed by greater success, and it is indeed true that when fragments of embryonal cartilage are introduced into adult animals, they sometimes do grow and proliferate abundantly. But few of the embryonal tissues, however, show any such ability to accommodate themselves to the new sur-

roundings, and like the adult tissues they nearly always die and become absorbed.

When we come to study abnormal conditions, a number of most interesting facts present themselves. Thus, the transplantation of grafts of the adult connective-tissue tumors is followed by exactly the same results as follow transplantation of the adult tissues themselves, and grafts of embryonal tumor tissues nearly always meet the same fate. All endeavors to transplant tumor grafts from man to the lower animals have met with signal failure, and all endeavors to transplant such grafts to healthy men have failed. The successful transplantation of tumor grafts to other parts of the patient's own body is a matter that might not only be predicted by the fact the malignant tumors transplant themselves with resulting metastatic growths, but also has been repeatedly demonstrated by actual experiment.

The transplantation of tumors from animal to animal has failed except in a few cases in which the transplantations have been made from animal to animal of the same species.

We note with interest the uniform behavior of normal adult and embryonal tissue grafts, and abnormal (neoplasm) adult and embryonal tissue grafts. In cases in which the invasion of tissue has been spontaneously accomplished in the growth of the primary tumor, secondary invasion of other tissues may easily be achieved, but where no primary neoplasm exists, inoculation of the tumor is impossible. Why is it that grafts of tumor tissue may sometimes be successfully transplanted to animals of the same species, as that in which the tumor originally developed, though all other transplantations fail?

To answer this question we must return to the already given brief review of our knowledge of cytolysis, and attempt to explain the varying phenomena manifested by the transplanted tissue grafts, as depending upon the presence or absence of lysogenic substances contained in the different tissues and reacting upon the other tissues.

We can surmise that there is something in the corium that inhibits the growth and development of epidermal cells, and causes the death of such of them as may through traumatic accident become implanted in it, and that through the action of this prejudicial substance we are constantly defended against their invasive activity. The fate of transplanted epithelium can be explained in this way, while the ready growth of epithelium transplanted, as in skin-grafting, continues only so long as it bears its normal

relation to the surface of the body where it should normally exist.

The exact nature of such tissue antagonisms can only be speculated upon. Probably when in its normal environment and possessed of its normal nutrition, each cell prepares antagonistic substances—anti-complements, etc.—by which the activity of the solvent substances is destroyed. We conceive the gastric cells to defend themselves against the corrosive action of the gastric juice in this manner, for so soon as their health is destroyed they are attacked and digested. An implanted graft of tissue probably suffers solution for the same reason.

Let this defensive mechanism governing the relation of tissue to tissue be modified, and a predisposition to cellular invasion becomes inevitable. One can conceive that the development of malignant tumors depends, at least in part, if not altogether, upon some such modification. Either the cells of the epithelium become able to dissolve and thus invade the adjacent tissues, or, as is more probable, the adjacent tissues lose their ability to antagonize the invading epithelium. Such loss of balance may be the result of local conditions occasioned by parasites, or as seems more probable, depend upon constitutional disturbances, for though carcinoma begins as a focal lesion, the invasive power of its cells is manifested in all the tissues.

Now let us see how this theory of the development of malignant tumors may be applied to the origin of syncytioma malignum.

When we consider the phenomena attending the imbedding of the fertilized ovum, as described by Peters and others, we find that as the little egg reaches the uterus and lodges upon the thickened endometrium, known to us as the decidua, the cellular aggregation upon its surface, the *trophoblast*, exerts an eroding effect upon the epithelium, so that the surface is denuded and the ovum brought into contact with the deeper endometrial tissues. Once in the nidus thus prepared to receive it, the trophoblast develops villous extensions over which the cellular mass spreads to form a thin layer, known to us as the *syncytium*. The villous outgrowths covered by this cellular tissue, through its cytolytic activity, continue to work their way deeper and deeper into the decidua until they reach its sinuses, and become bathed by the maternal blood. Thus, the ovum when fertilized, and new capabilities are thus imparted to it, is able to develop some substance by which it can successfully antagonize the maternal cells and bring

its own tissues into contact with its future source of sustenance, the maternal blood.

When we follow the natural history of the syncytial tissue during pregnancy, we find that though the greater part of it remains in the spaces between the chorionic villi, in nearly all cases the uterine tissue is invaded to a considerable depth by its cellular prolongations. These usually disappear, but an examination of post-partum uteri shows that they sometimes persist for a considerable length of time, and not infrequently interfere with successful involution. When considerable sized masses remain, it is well known that they occasion hemorrhage and the formation of uterine polypi, which must be removed by surgical interference.

In certain rare cases, the depth to which they extend and the activity of their vegetation, leads to the formation of a peculiar hemorrhagic neoplasm in the wall of the uterus, which we know as syncytioma malignum. In more rare cases, fragments of the tissue entering the venous sinuses are transported to other viscera, in which they continue to grow in an identical manner.

In order that the ovum shall be properly imbedded, and shall be able to maintain its hold upon the maternal tissues, it is essential that its cells be able to combat whatever defensive cytolytic activities they possess, but in order that their growth shall not be excessive, it is equally essential that the maternal tissues defend themselves against excessive invasion. There must, therefore, exist between the embryonal and maternal tissues a cytolytic equilibrium, through which the variations favor the embryonal tissues during pregnancy and the maternal tissues after parturition. In this way the maternal tissues are compelled to submit to a certain invasion by the trophoblast and syncytium. So soon as the embryonal tissues lose their invading power, the maternal tissues once more assert themselves, and the presence of the embryonal tissues is resented. After the exfoliation and expulsion of the chief mass, the remnants are soon dissolved.

Variations from the normal condition may occasion various pathologic conditions. Thus, should the ovum fail to provide the necessary cytolytic substance, it would be unable to secure an appropriate nidus, and failing properly in this, would, no doubt, be lost. Sterility might result from such a cause. Or should the cells of the embryo provide an insufficient amount of cytolytic energy, so that the appropriate arrangement of embryonal and maternal elements could not take place, abortion might be the outcome. Again, should the ability of the embryonal cells be such

as to enable them to accomplish successfully the embedding and yet fail to enable them to resist the antagonistic substance of the maternal tissues until the completion of gestation, miscarriage might result. Should the ova habitually fail to supply sufficient energy to meet the various requirements, habitual abortion or habitual miscarriage would be the result.

On the other hand, should the maternal tissues fail in their antagonism, we can conceive that the actively growing syncytium would invade the uterine wall with abnormal rapidity, or to an abnormal extent, so that during involution, fragments might be retained for an indefinite period, occasioning local disturbance if quiescent, or disorganization of the uterine tissues with hemorrhage (*syncytioma malignum*) if active. If the ability of the maternal tissue to resist the invasion of these cells was general instead of local, the formation of metastatic secondary masses in various parts of the body to which syncytial fragments were accidentally transplanted, would be the result.

PLASTIC SURGERY OF THE FEMALE GENERATIVE ORGANS.

BY

HENRY P. NEWMAN, A.M., M.D.,

Chicago, Ill.

THE object of this very brief note upon a subject which I had hoped to be able to present to you fully, as its importance merits, is not to tell you what plastic surgery is, nor when to do it, nor technically how, but to offer some suggestions as to why it should be undertaken, what should be the personal equipment of the operator and what results he should expect to accomplish. Plastic surgery being conservative work, requiring special fitness and training, was, relatively speaking, for a certain time relegated to disuse in favor of the more brilliant feats of major surgery made possible by the triumphs of asepsis and improved technique. Then the gynecologist thought to lay aside his distinctive cognomen and ally himself with the general surgeon. But the outcome was so far from satisfactory that there has been a return to the fellowship of our honored pioneers, such as Sims, Emmet, and others, who saw clearly the scope and obligation of gynecology as a dis-

tinct and self-sufficient specialty. Not to dispute with the general surgeon his right to invade the domain of the pelvis and remove organs where the indications are definite and absolute, there is enough in plastic surgery alone to sustain gynecology as a scientific specialty. He who does not realize this, will, perhaps, never know why he has so many failures with such good and time-honored methods. It is because he has been content to do something—a repair of the perineum, perhaps, resection of an ovary, amputation of the cervix, stitching up of fistulous openings, without calling upon all his reserve of experienced judgment to weigh the indications. And the experienced judgment which ought to aid him in making his diagnosis, deciding his treatment and determining his prognosis, is nothing if it is not gynecological science. Just as the artisan, habituated to the work, sees in the worn or broken article given him to mend, the story of its accident or misuse, the faults in its construction or composition, and thereby is able to judge how far and by what means he can hope to restore its integrity and usefulness, so the gynecologist, confronted with a pathological condition, searches back in the life of the patient for the productive factors—to child-birth, to puberty, to the pre-natal period, and adds this history to his knowledge of the present habit and temperament of the woman before undertaking measures for her relief. It may be surgery to say on clinical first examination of a patient: "Here we have a torn perineum, gentlemen, we will proceed to repair by the most approved method of colpoperineorrhaphy," or, "We have here a lacerated cervix,—tracheloplasty." It would be gynecology to say: "This perineum has been torn for years, throwing out of gear a whole set of delicately balanced organs; has produced local pathological conditions more serious than the original lesion and a resulting disturbance of function in the system generally. The woman is abnormal, invalid, unhealthy, and it is the secondary affections which have driven her to seek relief. We have here not only a bit of local surgery to do, but a general remodeling of the organism to accomplish. Our plastic work will not be finished with the hour's use of the knife, we must literally remould the woman." If this seems fanciful, quixotic, think for a moment what is concerned in the profession of medical science. Toward each patient the physician assumes the rôle of dictator infallible in all that concerns bodily health, and in this age of complicated living when we have artificialized as far as possible all natural processes, it is worth the best man's untiring and zealous study to attempt to

reconcile nature with modern modes of life. In dividing our profession into specialties we have need to keep the great and saving characteristic of the old family doctor, personal nearness to his patients. This individual confidence and intimate trust is necessary to the specialist and consultant, and his work will be correspondingly valuable as he cultivates it. Disease in the human body has the power of compelling and absorbing the interest and attention of the patient to a prohibitive degree, nothing else for the moment is of the least importance, and he is ready to meet professional advances more than half way. How often do we see his case disposed of in a purely impersonal interview of a few minutes ending with the purchase of a high-priced opinion which is Greek to him, but upon which alone he thinks he must depend for salvation. How often do we see him perturbed and miserable, doubting the value of the prescription he has bought, fall in with some cheerful athlete, perhaps, who buoys him up with the contagion of hopeful spirits and takes him to some non-professional practitioner who cures him? That is the sort of thing which occurs in the treatment of pelvic diseases oftener than any other, and it is in gynecological practice that the need for this relation of dictator and counselor is greatest. "I went to Dr. So and So, and he took me to a specialist, who said I needed an operation." This is the entire history, medically speaking, of many a woman who does indeed need an operation as part of her treatment. But I am getting too far afield, although this all relates to the point, as evidence of what the gynecologist should be and how he should go about his plastic surgery of the pelvic organs. It is a sufficiently weighty responsibility, this repairing of lesions about the genital tract. Those men who tried some years back to create a new specialty of "orificial surgery," founded their misguided zeal on one very tenable argument, that the orifices of the body are of extreme significance in the animal economy. It is vital to remember this in work upon the pelvic outlet. In choosing an existing method or attempting some original procedure the function and uses of the tissues under consideration must be kept in mind. The continuous demands upon these organs, the tireless activity of the body which culminates here, the aseptic features to be noted in connection with the eliminative processes, the rich vascular and nerve supply; nowhere else is there such a complication of difficulties as this to enlist the skill of the operator. There is another point from which the relative importance of pelvic plastic surgery is vast. Work undertaken

to correct defects or malformation in other parts of the body is mainly for cosmetic purposes, and while requiring skill and judgment, rarely touches the question of general health; whereas in restorative operations upon the pelvic organs the correction of defects almost always means the re-establishment of function or the restoring of muscular integrity. Much of the failure of plastic pelvic operating is due to the fact that this special difference is not taken into account, and work is done with the view simply of restoring surface conditions as it were, witness the mere superficial or skin union we find in some perineorrhaphies. In such cases only the outer integuments are restored and all the under muscular structures left as they were to continue their hopeless inadequacy and the long train of evils already present in the patient. In this sort of superficial work, which seeks to obtain what might be called cosmetic as distinguished from functional effects, the basic principles of the operations originally designed by Sims, Emmet, and others, are lost sight of; that is the gynecological significance, the relation to the functional life of the patient. I do not know how to emphasize this too strongly, and in this connection might relate an incident which happened to a friend of mine whose surgical abilities are above criticism. He does not claim to be a gynecologist, but sees no reason to refuse when called in by a general practitioner to do pelvic work. He came into my office one day with the information that a patient upon whom he had operated the day before for lacerated cervix had developed sudden and alarming symptoms, was in collapse. I said: "What did you do?" "Nothing in the world, but sew up the cervix, as I was asked." An examination proved that the woman was suffering from the effects of a ruptured tubal pregnancy. The trachelorrhaphy had been well done, but it was done at the wrong time and for a condition due to far other causes than the laceration. The situation, in fact, as all such pelvic situations, called for the exercise of gynecological judgment.

The woman's pelvic organs are the index, rather the foundation and support of her general health. If they functionate normally (and there is no primary organic disease elsewhere), all is well, if not, nothing is right. And this is the indication for plastic work in cases of defect of these organs: if function is disturbed, interfere. The trouble may date from the pre-natal period of development or from puberty, or it may be due to accidents or infections at any time. Usually it will be found that the initial lesion has assumed secondary importance as a causative factor in

the pathology. It will be the train of greater evils resulting which will call for aid. And this brings out another suggestion and one to which I attach the greatest importance, viz., multiple operating at a single sitting.

Instead of operating upon the cervix, or perineum or vagina or other organ alone, according to the most prominent lesion, and then waiting for results, perhaps having to subject the patient to a tedious suite of surgical procedures, during which time she is in bondage to the gynecological chair and the habit of invalidism has grown upon her to a desperate degree, I make a practice of doing at one and the same time all the different procedures which the pathology will justify—colpoperineorrhaphy, tracheloplasty, excision of the tubes and ovaries, curettement, operation on the round ligaments, rectal or urethral work. This putting all the parts into as nearly as may be normal anatomical relations, gives nature the best possible opportunity to do what is required of her, practically the whole process of cure being in her hands, for surgery can only remove obstacles to her work. From the patient's point of view the proposition is admirable. It requires but little longer convalescence to get up from six or eight simultaneous operations than from one, and then they are done and one has nothing to do but get well. The gynecologist, too, has everything to gain. He can assure his patient that she is now as nearly normal as mechanical science can make her and that she has only to follow instructions and a rational course of life to enjoy vigorous health again. Of course it may be a long road to restored vigor, but it is materially shortened by this manner of operating. Parts that have been subject to long-continued disturbance of circulation, infiltration and connective tissue formation have undergone changes which are hard to overcome; functions that have been disordered for a long time are difficult to restore, and there may be an atrophy from disuse and malnutrition that it will require the best efforts of nature to remove. Which is only an additional argument in favor of doing all that can be done once and for all. In the choice of methods one is not limited to original attempts. He has an unlimited program already mapped out for him, but he will do the best work, nevertheless, who can select intelligently and adapt skilfully the procedure to the patient. Plastic surgery of the female genital organs should be undertaken only, aside from cases of trauma or acute affections, when the local defects interfere with nutrition and circulation in those organs, thus giving rise to disturbance of function. The oper-

ator should be endowed with gynecological sense and he should expect in his results not simply correct superficial contours, but such thoroughness of effect that normal functions may be re-established.

100 STATE STREET.

THE PHILOSOPHY AND RATIONALE OF UTERINE DISPLACEMENTS.

BY

CHAUNCEY D. PALMER, M.D.,

Professor of Gynecology and Clinical Gynecology, Medical College of Ohio.

THE true causes, the reasons, the powers, and the laws which what at sea, regarding the rationale of uterine displacements. have always been an enigma to the practical physician. This is not a matter of surprise, considering the diverse expressions of views entertained by men of authority. Many of the older members of our profession can recall the influence of Hugh L. Hodge, in his explanations of the pathology and the treatment of uterine displacements. To him, more than to anyone, are we indebted for the proper use of the hard-rubber pessary. Grailey Hewitt will always be remembered for the efforts in his elucidation of the mechanical system of uterine pathology. Not all female pelvic symptoms can be satisfactorily explained on the basis of chronic inflammatory lesions, or of traumatism, or of disorders of place, of the pelvic organs and structures.

Notwithstanding all which has been written, we are still somewhat at sea, regarding the rationale of uterine displacements. But the recognition of the four cardinal principles in the etiology and pathology of displacements of the uterus is so satisfactory that they afford the most rational means of treatment, in dealing with these diseases. They are:

- (a) Increased bulk and weight of the uterus.
- (b) Relaxation of its supports.
- (c) Increased intra-abdominal pressure from above.
- (d) Increased traction from below.

All individual conditions may clearly be classified under one or more of these headings.

There is an immense quantity of medical literature concerning

the normal position of this central organ of the female pelvis and the forces which hold it in situ. There is no fixed or settled position of the uterus. It must move, and be ever changing its position and relations, altered as it is by the changing postures of the body, the functional movements of the bladder and intestines, by sexual intercourse, by menstruation, by pregnancy and parturition, and by the prevalent custom of dress. In some there is an excessive mobility of this organ, it being at one time anteverted, at another retroverted. Fritsch, of Bonn, asserts that no so-called displacement is abnormal; that retroversion is not unnatural.

The position of the uterus can best be determined when the patient is in the erect or horizontal posture, and after the bladder and the rectum have been evacuated. Only wide departures from the normal constitute pathological malpositions.

Symptoms of pelvic discomfort are present in many cases of minor displacements; again they are entirely absent, even in conditions of major displacements. We may observe the same symptoms whether there is, or is not, any displacement. Not infrequently, too, do we accidentally discover uterine displacements, when not a single symptom is complained of.

Symptoms, however, usually manifest themselves sooner or later. Evidently too much stress has been placed on the seeming symptoms. As a consequence grave disasters have come from excessive local treatment. As there is no relation between the severity of symptoms and the degree of malposition, and as there are no pathognomonic symptoms of this morbid condition, the only rational explanation of the symptomatology is that the presence or the absence of symptoms is owing, largely at least, to the presence or absence of changes in the blood circulation; or, it may be, to the existence of some complication. For instance, I have not unfrequently observed a marked procidentia, when little or no discomfort was complained of; on the other hand there have been constant and painful symptoms with slight retroversion; but the uterus was, in some cases, adherent and associated with prolapse or disease of the appendages.

Let the circulation of the blood be impeded within its vessels by traction, then all of the pelvic contents show a blood stasis. A varicose state of the veins of the broad ligament—the pampiniform plexus, especially the left, causes a dull aching pain. Engorgement, therefore, seems to me to be the chief underlying factor of the symptomatology of this uterine pathology. A proof

of this is that patients naturally assume the recumbent posture, and obtain relief from pelvic symptoms by doing so.

A pure displacement of the uterus always means some hernia of the pelvic floor. Any impairment of the integrity of the perineal structure is a passive cause. We see at times much uterine displacement, without any seeming impairment of the perineal structures. A complete rupture of this structure does not necessarily cause any displacement of the uterus, although some damage to the perineum is a prime causal element, by weakening the pelvic floor, and by allowing prolapse of the pelvic contents. Probably the most serious mistake, when relief is not afforded to the pelvic symptoms of uterine displacements by vaginal plastic operations, is the failure to completely rectify the abnormal relaxation in the pelvic floor, brought about by the undue stretching of this important intra-pelvic support during some previous act of parturition.

So long as the utero-sacral ligaments retain proper tone and strength, swinging, as they do the cervix high in the hollow of the sacrum, so long retro-version is impracticable; for it is to some disease of these ligaments that we are to look always for the cause, at least in part, of backward displacements, and to their restoration for relief. Excessive relaxation of the pelvic floor, following forcible stretching, undue in time and in degree, is worse than perineal lacerations in effect, because so often unnoticed, and because more difficult to overcome.

A not uncommon cause of retroversion after abortion, or parturition at term, is the faulty position of the lying-in, enforced or allowed; prolonged it may be, with the patient in the dorsal decubitus. The uterus is enlarged, heavy, heavier in its posterior wall, because there thicker and more hypertrophied, and this, together with manifest relaxation of the surrounding supports, always predisposes to backward displacement. This is often further aided by a too firm application of an abdominal bandage, forcibly tightened, it may be, to restore the symmetry of a virgin waist.

The levator ani muscles and the pelvic fascia constitute the pelvic diaphragm; on it the abdominal pressure from above largely rests. A practical application of the recognition of these causes urges the obstetrician to insist that all lying-in women assume, for the most part, the lateral decubitus, within a few hours after the completion of parturition, and maintain the same for some two weeks; and for weeks longer, whenever lying down. Many

retroversions could thus be prevented; many backward dislocations of the uterus could be materially improved or entirely remedied at this time and in this simple way.

Many women have submitted to unnecessary and awkward local manipulations in attempts to correct seeming malpositions of the uterus, without fully and practically considering whether the symptoms complained of are independent of, or consequent on, the special disorder of place.

The intimate relationship between the pelvic symptoms and the state of the general health is forcibly illustrated by cases in which there are no local manifestations of any pelvic diseases, so long as one remains well in general. But, let such a mother suffer some unusual shock, physical or mental; let her realize some deterioration in her physical standard, she will speedily commence to speak of a *bachache*, a sensation of pelvic discomfort, to have an irritable bladder, with some menstrual derangements. It is not so much the moderate prolapsus, the slight abnormal anteversion, or the mild retroversion which she has, as it is the signal infringement of causes upon the constitution at large, which cries aloud for help. The uterus is in the same position as before, but the woman's nervous system has been hurt. The uterus is not materially diseased because it is a little bent or turned one way or the other. It is not the displacement, so much as it is the antecedent physical ill-development, and the constitutional depreciation of her health, which disqualifies her.

No more clear evidence in a medical sense can be presented that it is not the malposition of the uterus, but the altered blood stasis of this organ, which is the underlying cause of the pelvic discomfort in such cases, than the relief which is at times obtained in the treatment of anteversion, by the introduction within the vagina of an Albert Smith pessary, not within the anterior vaginal cul de sac (the ordinary method for treatment of anteversion by a pessary), but by its insertion, as is usual for retroversion, into the posterior vaginal cul de sac: thereby actually increasing the anteversion, but at the same time lifting the uterus within the pelvis, and facilitating its stagnant blood circulation.

There are many cases of chronic ill-health of women, arising from sundry causes, not dependent on any special intra-pelvic disease, in which some uterine displacement is detected. It is the easiest matter for the medical attendant to infer and state that this changed position of the womb is responsible for the general derangement of her health, when probably it is but incidental.

and in no way has acted as an etiological factor. If, under such circumstances, an active local treatment is carried on, the constitutional impairment of health is perpetuated, if not aggravated. The disorder of place of the uterus is trivial, as balanced against the causes arising from general influences.

In the management of any uterine displacement, the first and the most important of all things is to have a correct estimate, as far as practicable, under which of the causative factors the case can be classified; together with a thorough appreciation of all the local uterine and peri-uterine lesions and conditions. A complete and accurate diagnosis, and from it the deduction of a rational treatment, are by no means always easy of accomplishment.

The first consideration in treatment is the improvement of the general health by diet, exercise, rest, baths, medication, posture of body, and dress. Attention must always be directed to the relief of constipation. The second consideration looks to the betterment of the local uterine and peri-uterine alterations of circulation. Abate the local inflammations, improve the pelvic circulation, diminish the uterine weight and bulk, strengthen its supports, lessen the intra-abdominal pressure from above, diminish the pelvic tractile forces from below; these are essential indications. A sub-involuted uterus, a chronic endometritis, a lacerated cervix uteri, need especial preliminary consideration and attention before any treatment is to be directed to the displacement itself. The whole train of symptoms seems at times attributable to an old bi-lateral laceration of the cervix uteri. Flexions always imply some interstitial change in the uterine walls: a relaxation, an attenuation, a fatty degeneration.

To diminish the bulk and weight of the displaced organ by depletion, as puncturing or curettage; to strengthen the intra-pelvic supports by general tonics and local astringents; to reduce the intra-abdominal pressure from above, by a proper adjustment of the clothing, by the maintenance of a better posture of body, and by the conservation of the normal angle of 55° of the pelvic brim to the horizontal plane; to increase the parenchymatous tonicity of the uterine walls by the administration of quinine, strychnine, ergotine, and by electricity, are constant indications. In all retroversions the broad and round ligaments are more or less lax, and the uterus itself is in passive hyperemia. These measures faithfully and skillfully followed, may be all that is required; especially is this true in reference to anteversion. Irreducibility of any retroversion, because of any perimetritic ad-

hesions, usually calls for an abdominal section, for such complications mean a chronic pelvic peritonitis with diseased appendages.

Before we admit the advisability of any pessary, or the performance of any major surgical operation in many cases, it is worth the while to inquire what certain electrical currents promise. The judicious application of the Faradic electrical currents does promote uterine contractions, does stimulate a sluggish pelvic circulation, does strengthen the surrounding muscular pelvic supports. This is true, whether the positive or negative pole is placed within the vagina. Generally, the cathode, is to be chosen, adjusted closely against the displaced organ. A polar selection of the primary direct current, with slow interruptions, should be determined by the character of menstruation, as to frequency, quantity, duration, and the presence of pain. For the most part, the intra-pelvic pole, from a short, coarse wire, wholly intra-vaginal, stimulates best the utero-sacral ligaments and the pelvic floor to contraction. So important are these structures, in maintaining the uterus in its normal posture that nothing, not even pelvic massage after Brandt, gives these tissues equal tone and strength. Faradization of the intestines above the pelvic brim has a favorable influence on any co-existing constipation. Electricity used in this way is essentially a pelvic tonic.

What now is the field of utility of the pessary? A vaginal pessary for the management of uterine displacements is a necessary evil. Using it now, it is true, very seldom as compared with twenty-five years since, we are nevertheless not as yet prepared to discard it, and probably never will cease to utilize it in a few properly selected cases. Like a crutch or cane for lameness, it has its place. Some women, suffering from uterine displacements, always experience comfort from its use, consent to nothing else being done, and clamor for its continuance. But seldom does a real cure follow its use. This statement implies that cures, symptomatic cures at least, do follow its occasional adjustment. Personally I confine its use almost exclusively to prolapsus and retroversion, in certain cases; seldom employing it for anteversion. In all cases, it should not only be comfortable, but it should create comfort. The persistent use of an Albert Smith or Thomas modification of a Hodge pessary, at first short and with a slight curve, gradually increased in length and curve, will enable one at times to permanently restore the uterus to a normal position. It must take out all slack of the posterior vaginal wall.

The pessary will give great satisfaction in appropriate cases of uterine displacement, in which the congestion and inflammation of this organ have been decidedly improved; cases in which there is no peri-uterine tenderness; always after the displaced organ has first been replaced, but will not remain in position; after of course the removal of all contributing causes. That it is not always so useful is the fault not of the means, but it is due to the want of a proper regard for clear indications and contra-indications in its utilization. The pessary is never intended for constant or indefinite use. Its proper adjustment requires a thorough knowledge of gynecic pathology, much experience, and not a little tact in manipulation.

Tampons of absorbent wool, dry or medicated with some suitable medicament, are always indicated in the early treatment of uterine displacements; for their mechanical support, if applied well as to place and to size; for their decongestive effects, to better the local passive hyperemia. Of course their place in therapy precedes the use of any pessary.

Too much stress cannot be made as to the maintenance of an angle of about 55° of the plane of the pelvic brim to the horizontal plane. Its significance is greater than would appear at first sight: in diminishing, as well as in directing, the superincumbent weight of the abdominal viscera. The promontory of the sacrum ought to be some four inches higher than the top of the symphysis pubis. This pelvic angle of 55° much diminished becomes a serious drawback to the rectification of prolapsus and retroversion, especially in feeble and elderly women. Conditions of prolapsus uteri, and especially those of retro-version are always relieved in some measure by the knee-elbow posture; so that it is well to urge such patients to strenuously assume such a position for a half hour once or twice daily. Having now improved the general health, regulated the movements of the intestinal canal, removed or mitigated, as far as practicable, any antecedent or co-existing chronic pelvic inflammation; considered the indications for, and the need of, any vaginal pessary, and the use of the Faradic electrical current, it is well to inquire what other means, especially surgical, are called for, to relieve or cure the individual malposition.

In the first place, all lacerations of the cervix uteri, of the vaginal canal, and the perineum, should be repaired, as soon as expedient, whether associated or not with versions or flexions of the uterus. A skillfully performed sharp curettement of the whole endometrial cavity; a tracheloplastic operation, or some

modification thereof; a well-timed colporrhaphy, anterior or posterior; a perineorrhaphy, not simply for a torn perineum, but also for any manifest relaxation of the pelvic floor, do remove primary causative factors in many cases, do withdraw aggravating associations, and do pave the way for the proper use of other suitable measures, if needed.

Various major operations have been recommended. In the last twenty-five years, as pessaries have been gradually going out of use, many surgical procedures have come into play.

The Alexander operation has its place, in gynecic therapy, but in my judgment its field is very limited. It should be confined to cases of slight descent of the uterus, associated with retro-version and flexion, in which the displaced organ is easily replaceable, free from adhesions, not complicated by the presence of tumors, or diseased appendages; and finally to such cases as are not satisfactorily relieved by mechanical supports, or other simpler measures. It is but fair to state that almost any displacement, which can be benefited by an Alexander operation, can likewise be equally improved without any operation whatsoever; simply more time is needed.

Abdominal hysterorrhaphy or ventro-fixation has a seemingly wider field of operation. We should ever bear in mind, however, that the position of the uterus after ventro-fixation is not physiological. Belonging as does this organ, not to the abdominal but to the pelvic cavity, and susceptible as it is to varied movements, it must be recalled that hysterorrhaphy fixes it, and in the abdominal cavity, both of which are unnatural. There must be some danger in certain instances of intestinal obstruction by its artificial ligaments or attachments; and an enforced impracticability for an easy and natural progressive growth, with its changing positions, should pregnancy occur; and later on, there is very apt to be great hindrance in delivery of the fetus, should parturition at term follow. I have performed this operation but twice, in hospital practice. While the patients experienced relief therefrom, I have been unable to follow their cases. It is quite popular in parts of Germany, but there the social life and the national form of government are very different from those in this country. It probably never will be a popular procedure in this country.

It would seem rational to discard hysterectomy for any otherwise curable displacement of the uterus during menstrual life, but it is justifiable for marked prolapse in certain cases when

pregnancy becomes impossible, because of age or any artificial menopause.

Neither an Alexander-Adams nor a hysterorrhaphy will relieve the symptoms of any displacement, unless the pelvic circulation is bettered. If the appendages are seriously diseased in cases of retroversion or retroflexion, and if the uterus is irreducible or fixed in any awkward position, because of adhesions, an abdominal section is clearly indicated, to remove these diseased structures. At this time the uterus is liberated, replaced, and put into a normal position.

Hysterorrhaphy often must be supplemented by an elytrorrhaphy or perineorrhaphy to secure the best results. When some shortening of the round ligaments by the abdominal route is done, after the free exsection of damaged tubes and ovaries, it is permissible and advantageous at times to anchor the stump of the broad ligaments to the abdominal wall at the site of its section. While this operation is slightly more dangerous than is the Alexander, it is not more so than is ventro-fixation; but it is vastly superior to either in its ultimate results for good.

No method of shortening the long round ligaments is equal to the intra-abdominal. The folding up and the stitching together the layers of these structures can now be done, as the necessity of the case requires, while all associated morbid entities of the uterine adnexa are removed, or rectified surgically under the naked eye. Its weakest feature is the comparatively feeble points of attachment of the anterior ends of the round ligaments.

Personally I have had no experience in stitching the slack of the round ligaments to and into the vaginal folds, as suggested by Dührssen and Vineberg, for I have rested content with the methods referred to, which to my mind seem more rational.

Any proposal to fix the cervix uteri to the posterior wall seems unreasonable; besides it is dangerous, if pregnancy and parturition ensue. It is certainly inferior to the intra-abdominal shortening of the round ligaments.

Vaginal hysterectomy is uncalled for, unless in the very aged; for then the natural resiliency and integrity of the soft tissues of the pelvis are lost by senile changes, rendering any plastic procedures less effectual.

In fine, innumerable operations have been devised and performed in recent years, for the rectification of posterior malpositions, most of which, while ingenious, are more or less dangerous, unsatisfactory or useless. I am not disposed to believe that all uterine dislocations should be corrected, and this organ main-

tained in position by some means, and at all hazards. We always must recognize the complexity of the local condition, and that more than one structure is almost surely involved.

My experience compels me to refer again to the great opportunities and advantages we possess, in dealing with many cases of this kind, by the utilization of plastic uterine and vaginal operations. A well-performed Hegar operation on the perineum and the posterior vaginal wall, in which the denuded area should vary in length, width, and shape, always being, however, somewhat triangular in form, is a wonderful boon to suffering women, for many intra-pelvic infirmities.

It is to these parts torn and relaxed, what Emmet operation is for lacerations of the cervix. Thoroughly done, any lateral elytrorrhaphy is uncalled for.

The Stoltz operation on the anterior vaginal wall, now generally accepted as the proper procedure for cases of cystocele, and any prolapse of this anterior partition wall, can, it seems to me, be much enhanced in its execution and results, by the denudation of a rather long, quite deep, elliptical area, varying in shape to suit individual conditions, and the stitching together of the raw surfaces with sutures of silkworm gut run transversely. The anterior vaginal wall is then narrowed, much strengthened, and not shortened, as it always must be by the original Stoltz operation. A thoroughly done Stoltz operation, modified as suggested, and an equally broad and deep Hegar, with sutures of silkworm and catgut, passed deep and transversely, to catch up and draw together the separating muscular fibres, may so strengthen and narrow the vagina that a descending uterus cannot pass through it. Some intra-abdominal operation must, however, eventually be done to secure perfect results. In the denudation of the special areas for this modified Stoltz and the improved Hegar, they should be made abundantly wide and always more or less deep, to and into the muscular coats of the vagina, so that when the sutures are passed transversely, firm and strong supporting partitions are secured and maintained.

It is best, when there is undue relaxation of the pelvic floor, as there must always be in conditions of procidentia uteri, to utilize a continuous suture into the deeper pelvic fascia with fine catgut, before the more superficial layers of silkworm gut are adjusted. These methods of suturing secure complete and accurate coaptation of the opposing denuded areas, and a thorough construction of a solid perineum and vesico-vaginal septum.

FIBROMYOMATA COMPLICATING PREGNANCY.

BY

ROBERT A. MURRAY, M.D.,
New York.

THE subject of my paper was suggested by a recent case.

Mrs. M., aged 30, married eight months at the time of operation. Menstruated first at fourteen years and was regular and normal in her menses up to six years ago. A severe attack of acute peritonitis almost fatal, caused by getting her feet wet, was followed by a prolonged convalescence. Since that time, the menses though regular in time, and quantity, were accompanied by great pain, and prostration before, during, and succeeding the flow, so that the patient was confined to bed usually for four to five days.

After marriage I treated her for the dysmenorrhea, and built her up with tonics, and the dysmenorrhea became much better. When four months married her menses ceased, and an examination determined pregnancy; the uterus then being normal in position and regularly enlarged, no tumor evident to the bimanual touch.

Morning sickness, and frequent micturition, were annoying symptoms, but the patient having moved to the country, I did not see her till August 14, 1903, when about three and a half months pregnant. The patient had emaciated very considerably, by constant vomiting, and the restlessness caused by frequent urination; constant pain was felt over the bladder, and micturition did not relieve it.

The appearance of the patient showed abdominal distress. Temperature 101.5° , pulse 110.

The abdomen was very sensitive to pressure, and in the hypogastrium could be felt a tumor extending to the left half way to the umbilicus. Bimanually the uterus could be felt enlarged to about the size of a five months' pregnancy fixed immovably in the pelvis, and a tumor most marked in front and to the left pressing firmly on the bladder; the whole mass was extremely sensitive to pressure. Three days later Dr. E. Grandin saw the case in consultation, when the pain had been relieved by anodynes, and he confirmed the diagnosis of a rapidly growing fibroid in the

anterior wall of the uterus, and we decided from the condition of the patient that operative relief was imperative.

Three days after, examination under ether, confirmed the diagnosis, and the patient being prepared for operation, celiotomy was performed. The tumor was found in front and to the left of the uterus, the bladder being drawn up, and spread out over its anterior aspect.

The bladder was freed, and an endeavor made to enucleate the tumor but its very broad base and deep attachment to the uterus, the very free hemorrhage, and the impossibility of drawing the uterine walls together, or covering them with peritoneum decided me in performing supravaginal hysterectomy, leaving the ovaries, which were normal, in situ. The peritoneum was drained through Douglas' cul-de-sac with gauze which was withdrawn during the first week.

With the exception of a mild attack of phlebitis in the third week, the patient made a good recovery, and was able to be out in about five weeks, and has since been well. Examination of the tumor by Dr. Grauer shows it to be a myo-fibroma. I have seen during the last ten years three cases of interstitial myoma in the posterior wall of the uterus. All the cases were between 30 and 35 years of age, and primiparæ in the third month of gestation. In all the uterus was incarcerated in the pelvis, and the diagnosis had been made of retroversion of the uterus. Two of the patients had been travelling and had sanious and fetid vaginal discharge for two weeks; both were septic and an endeavor was made to relieve the incarceration by pressure in the knee-chest position. In one it succeeded; abortion resulted with death on the second day from sepsis; the other died from sepsis, as all operative measures were refused on account of her weak condition.

In the third patient who was in fairly good condition, I was able to push the uterus out of the pelvis, the pregnancy continued for two months to the fifth month, when abortion occurred with profuse flooding, but the patient got well; the subsequent history of the fibroid is unknown to me.

A case of fibro-myoma in the anterior wall of the uterus, causing abortion at the third month, with profuse hemorrhage in a primipara of thirty years I saw with Dr. Fruchtknight six years ago. I emptied the uterus, but had to use the blunt curette to clean the cavity. The patient recovered, and the tumor grew much smaller; the discharge was purulent for about one month

after the abortion, which was due to sloughing of the fibroid. The patient recovered. Of the five cases cited four were interstitial fibroids, presumably developing rapidly on the supervention of pregnancy, and had not been examined until the acute pressure symptoms developed, and two of the cases not until they were profoundly septic, one miscarried after the uterus was raised up and the incarceration relieved. The other died of sepsis without operation, the incarceration not having been relieved. The two other cases, one in the posterior wall, the other in the anterior wall but who were not septic, the uterus having been raised by pressure in the knee chest position, both miscarried, one after two months, the other immediately, both had profuse hemorrhage, and profuse discharge of a purulent nature, and after prolonged sickness got well with a reduction in the size of the fibroid.

These cases were treated when myomectomy, and hysterectomy for fibroids was an infrequent operation, and therefore much more likely to be refused by the patient.

In the first and most recent case, the patient did not show undue enlargement of the uterus, and certainly no tumor at the sixth week; but when seen at the fourteenth week the tumor was very easily determined, and pressure symptoms were marked, and the patient's general condition not good. If the patient had been under observation, a myomectomy would have been possible with the continuance of pregnancy.

The diagnosis of fibroids with pregnancy is not always easy. From the above, and also from recorded cases, we can deduce: That they are most frequent in primipara between thirty and forty years of age; who have usually given histories of dysmenorrhea. That they are apt to cause displacement of the uterus, and by their weight if situated posteriorly, or low down anteriorly, and also by their rapid growth, to give great pressure symptoms on the bladder, and rectum and marked vomiting with pain in the abdomen. From the displacement and the presence of the tumor a diagnosis of retroverted uterus is apt to be made.

From the continued pressure degenerative changes occur in the tumor, causing sepsis and sanious, foul discharges, followed if possible by abortion, accompanied by profuse flooding and possible septicemia from post partum degeneration and sloughing of the fibroid. Interstitial and also displaced subperitoneal fibroids with long pedicles in the early months of pregnancy may be confounded with ovarian cysts, displaced cystic ovaries, dermoid cysts, and solid tumors, as a number of cases are on record

where the abdomen has been opened to remove an ovarian cyst, which proved on inspection to be a fibroid, a cyst under pressure giving the same evidence to touch as if solid. The mistake has also been made that a rapidly growing fibroid has been taken for pregnancy with a fibroid, when pregnancy did not exist.

Pregnancy should never be diagnosed unless other symptoms than rapid growth of a symmetrical uterus be present. Hysterectomy has also been performed when the apparent rapid growth of the tumor was really the growth of the pregnant uterus, and not of the tumor, the latter being innocuous.

The discussion of this subject naturally divides itself into what is the effect of pregnancy on fibroids; and secondly, what is the influence of fibroids on the course of pregnancy and labor? By the answers to these questions we may determine sound lines of treatment. The answer to the first inquiry will depend on the position of the tumor; subperitoneal fibroids are generally very little influenced by pregnancy, unless the tumor lies in the pelvis where pressure symptoms may be caused, or degenerative changes result from interference with its nutrition, and operation may be demanded during pregnancy. The submucous and interstitial variety are more prone to rapid growth but less likely to degenerate, but if any of the varieties be situated low in the pelvis or involving the lower part of the uterus pressure symptoms may demand operation during pregnancy. Septic infection and serious hemorrhages may render operation necessary in the puerperium.

The answer to the second question,—what is the influence of fibroids on the course of pregnancy and labor? The answer is very well stated in Donald's admirable paper. He says that he had come to the conclusion that in the majority of instances neither pregnancy nor labor was seriously influenced by these tumors but that in a small proportion of cases the danger to the mother and child was greatly increased. The risks during pregnancy might be summed up as follows: (1) Rapid increase in size of the tumor causing severe pain and distress. (2) Incarceration of the tumor in the pelvis. (3) Serious pressure on the bladder. (4) Degeneration of the tumor through diminished nutrition. (5) Excessive rotation of the pregnant uterus. (6) Abortion or premature labor as a result of pressure, or of submucous development of the fibroid. Abortion or labor might be complicated by (1) obstruction of the natural passages; (2) by mal-

presentations; (3) by retention of the placenta or membranes; (4) by extrusion of the tumor during labor.

During the puerperium the presence of uterine fibroids renders septic infection more likely, each case of fibro-myomata complicating pregnancy, must be treated on its individual merits. Whether the pregnancy be allowed to go to full term or whether to interfere can be determined only by the situation of the tumor, its growth, the pressure symptoms and the probable danger from operation during pregnancy, or of obstruction at the time of labor. The choice of operation may be determined by the will of the patient, if the pregnancy can be maintained till the child be viable.

Abortion with this complication has had a large mortality, and most authorities are agreed that it is bad practice. If no urgent symptoms are present the case may go on to term the tumor being lifted out of the pelvis by the enlarging uterus, and Cesarean section, followed by myomectomy or hysterectomy be performed.

If the uterus become septic by pressure, a hysterectomy should be done early. If the tumor is interstitial an early myomectomy before degeneration or sepsis is indicated, and in a number of instances has allowed the pregnancy to continue; though in Bland-Sutton's² case of an enucleation at the fourth month in which the patient went to term, at the time of the operation no other tumor was seen, but by the end of pregnancy the uterus was tuberosed with fibroids.

Emmet³ strongly advocates myomectomy. He says: "Between 1890 and 1900, the reported cases of myomectomy in pregnancy amount to 44; the maternal mortality being 9 per cent., the fetal 21 per cent."

Five cases of myomectomy in pregnancy, January 1, 1900, to April, 1901, have been reported by Doleris, Lewis, Muir Evans, Geumel and Emmet; in three, delivery occurred at term; term had not been reached when the other two cases were reported. A number of cases of abdominal hysterectomy have been reported at from the third to the fifth month. Although all operators prefer a myomectomy if feasible since the child is thereby given a chance.

At labor, if obstruction occurs a Cesarean section, if possible followed by an immediate myomectomy, or the Cesarean section leaving the uterus to be dealt with after the puerperium or a Cesarean section with hysterectomy after delivery of the child,

have all been performed successfully as the particular case demanded.

During and after the puerperium, since severe flooding is apt to occur at labor, and instrumental interference is necessary, added to this the sloughing of the fibroid mass, sepsis is very frequently a complication of fibroids, and hysterectomy may be demanded.

The use of the curette to clean out débris of placenta and membranes may open up the capsule of submucous fibroids and local sepsis may result from necrosis which may demand early hysterectomy to prevent virulent infection of the system. The curette should seldom be used in a fibroid uterus, for fear of infection, subsequent sloughing and sepsis.

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112 WEST 80TH STREET.

THE UTERINE LIGAMENTS: THEIR ANATOMY AND FUNCTIONS.¹

BY

J. RIDDLE GOFFE, PH.D., M.D.,
New York,

Prof. of Gynecology N. Y. Polyclinic, Visiting Gynecologist N. Y. City Hospital.

THE one universal principle upon which the entire structure of the physical sciences rests is that Nature is consistent, that like causes produce like results, and that uniformity characterizes the application of her laws. In studying human anatomy, or the anatomy of any animal species, we find that the principle Nature has applied to hold the various organs in place is that of suspension by ligaments. Briefly reviewing the organs of the human body, viz., the heart, the lungs, the liver, the spleen, the pancreas, the kidneys, the intestines, we readily admit that they, one and all, are hung by ligaments from the bony framework of the body. Not one of them is held in place or receives support from anything placed underneath it. Even the heart and the lungs, that might easily be left to get their support from the diaphragm which is

¹Read before the Woman's Hospital Society, Jan. 26, 1904.

a convenient shelf running across beneath them, do not receive any sustaining power from that source, but are suspended by their ligaments. Even the ovaries and the Fallopian tubes are readily admitted by all observers to hang on the posterior face of the broad ligaments *by their ligaments*, viz., the meso-salpinx and infundibulo-pelvic ligament and the meso-ovary and ovarian ligament respectively. Reasoning by analogy, and basing our conclusion upon the uniformity of Nature's laws, the logical inference is that the uterus is held in place by its ligaments. When we come to the uterus, however, authorities have been wont to ignore this uniform law of suspension and attribute its support to other agencies. And yet, weight for weight, no other organ in the body has so many ligaments.

These ligaments moreover are compelled to support the uterus, as is clearly demonstrated by the fact that when the supporting power of the floor of the pelvis is absolutely destroyed by the perineum being torn clear through into the rectum the uterus remains in place. The only exceptions to this rule are found in cases in which the uterus is displaced and dragged down by complicating conditions that overcome the resisting power of the ligaments. The functions of all the uterine ligaments are not restricted to the simple attribute of sustaining the weight of the uterus, nor is that even the principal function in all of them.

The Round Ligaments.—The round ligaments perhaps least of all are called upon for their sustaining or suspensory power. Their action in this particular is almost wholly indirect. Their chief function is to guide and limit the excursions of the fundus. In their quiescent state they hold the fundus to the front and thereby secure the impingement of the intra-abdominal pressure upon the posterior face of the uterus. This is now recognized as a very important factor in maintaining the proper pose and position of the fundus. As the bladder fills the fundus rises and tends to approach the promontory of the sacrum. Women, through modesty and lack of conveniences, are notoriously careless or negligent in the evacuation of the bladder and frequently carry the urine till the bladder becomes immoderately disturbed. At the clinic it is no unusual experience to examine women who have come long distances and sat upon the benches for an hour or more waiting their turn in nervous expectancy. In them, as detected on examination, the fundus uteri is carried quite to the promontory of the sacrum and the intra-abdominal pressure is found impinging upon the anterior surface of the uterus. Were it not for the round liga-

ments this position would be maintained and the uterus gradually crowded down into a state of permanent retrodisplacement. Upon inserting a catheter and allowing the urine to escape, the hand, laid gently upon the abdomen as the pressure from the bladder gradually relaxes, will feel the round ligaments showly but steadily contracting and drawing the fundus to the front, thus restoring it to its normal position. A similar and equally important function of the round ligaments is presented during gestation. One of the most noticeable things regarding the position of the uterus during this period is the fact that the fundus, even before the body of the uterus has become too large for the pelvic cavity, is drawn strongly forward to the anterior abdominal wall, and as it rises in the abdomen during the succeeding months, sweeps up along the interior face of the abdominal parietes so snugly that it carries the intestines and omentum upon its back and does not allow them to slip in in front where they would suffer from pressure and possible strangulation. This is the work of the round ligaments. The functions of the round ligaments therefore may be summarized, first, as indirectly supporting the uterus by maintaining its proper pose and thus directing the intra-abdominal pressure upon its posterior face; second, limiting the excursions of the fundus produced by the functions of the bladder; third, holding the fundus against the abdominal wall during gestation to keep the omentum and intestines behind the uterus.

The Broad Ligaments.—The function of the broad ligaments is largely a passive one. The connective tissue and muscular fibers, however, in the base of these ligaments undoubtedly lend great sustaining power to the uterus at the cervix when the uterus is dragged down toward the vulva, *i.e.*, prevent or oppose descent of the organ. The free border of the ligaments exerts a lateral pull upon the fundus and so limits motion from side to side; but as the round ligaments make up the free border of the broad ligaments this function may be assigned to them. The infundibulo-pelvic ligament, which is simply a fold of peritoneum produced by the mesosalpinx in its extension to the wall of the pelvis, also exerts a steadying influence upon the fundus. The chief functions of the broad ligament, as I understand them, are to furnish a support for the uterine appendages, which are hung upon its posterior face, and to furnish safe conduct to the bloodvessels in their course to the uterus. The latter, in my opinion, is the chief function and is connected more especially with the enlargement of the uterus in the process of gestation. Some arrangement must be provided

for the bloodvessels so that they may reach at one time simply from the wall of the pelvis to the uterus when it is in a quiescent (unimpregnated) state, and at another time from the wall of the pelvis, at full term pregnancy, to the fundus at the diaphragm. This arrangement, too, must make provision for a freer supply of blood when the fundus is at its extreme elevation than at any other time. This is beautifully accomplished by giving the vessels an extremely tortuous course, thus retarding the blood current during the quiescent period, and by allowing them to be straightened out as the fundus rises thus facilitating the blood current. The broad ligaments furnish a soft, elastic bed of cellular and connective tissue which permits of this expansion and in turn restores the vessels to their original condition. In all the wonderful economic devices of Nature in adapting means to ends there are few anatomical arrangements more admirable than this. If the course of the vessels in the quiescent state were straight, at full term they would be so dragged upon as to diminish their caliber rather than enlarge it.

The Utero-sacral Ligaments.—In the round ligaments and the broad ligaments we thus find other functions more prominent than the support of the uterus, but we come now to the ligaments of the uterus, whose chief purpose, if not the sole function, is to retain the uterus in its normal position, viz., the utero-sacrals. But it may be as well to consider them in connection with the utero-vesicals, for the two sets of ligaments taken together form a sling of tissue reaching from the promontory of the sacrum to the symphysis in which the uterus hangs suspended by their attachments just above the internal os. This point of attachment divides the uterus into two arms or levers, the long arm or fundus being in front and the short arm or cervix being posterior to it. The utero-sacral ligaments prevent descent of the uterus as a whole, while the utero-vesicals control the to and fro, or antero-posterior, motion. The fundus or long arm drops to the front by gravity and intra-abdominal pressure, the extent of this descent being limited by the restraining influence of the broad and the round ligaments, by the bladder and by the balancing force of the vaginal attachment on the short arm or cervix.

To get a correct notion of the forces at work in the pelvis a mental picture of the pelvis and its contents when the woman is upon her feet must be kept before us. With the patient in this position the uterus swings in the pelvis in a state of unstable equilibrium, its anterior face being nearly parallel with the hori-

zon. The uterus, weighing only 1 to 1½ ounces, and being suspended in a closed cavity and surrounded by tissues of nearly equal specific gravity requires only a slight suspensory force to keep it up off the floor of the pelvis, and this is supplied by the utero-sacral ligaments. These ligaments pass from the second and third bones of the sacrum downward and forward and are inserted one on each side into the uterus at the junction of the body of the uterus with the cervix. They are composed of connective tissue and muscular fibres. The peritoneum where it dips down into Douglas' pouch hangs over these ligaments, causing them to belly down in the middle and giving them somewhat the shape of a sickle. The muscular fibres of which they are composed are evidently a prolongation from the musculature of the uterus and participate with the uterus in its processes of hypertrophy and involution. The function of these ligaments may be more clearly demonstrated perhaps by considering the physics of the process of prolapsus, or of simple retroversion. The uterus never prolapses with the fundus foremost. The first step in the process is a sinking down of the cervix and a turning of its axis to correspond with the axis of the vagina. In this process, as in many others, it is the first step that costs, and so long as the utero-sacral ligaments do their duty and hold the cervix up in the hollow of the sacrum this first step cannot be taken. But when once they have given way or lost their tone and the process of descensus has begun the ultimate permanent displacement becomes only a question of time. This is the crux of the whole question of the support of the uterus. The round ligaments may be cut and their sustaining power destroyed, but so long as the utero-sacrals retain their tone and strength, prolapse, descensus, or even retroversion is impossible.

The theory advanced and maintained by Penrose that the uterus is sustained in place simply by floating in a medium of the same specific gravity as itself, and that the ligaments are only brought into requisition to restrain too great departure from its ideal position is absolutely untenable. He presents two arguments, first, that the attachments of all the uterine ligaments are on the same plane as their insertions into the uterus and therefore are not drawn taut till the uterus sinks below its normal level. Or to quote his words exactly: "When the woman is erect the insertions and origins of the various uterine ligaments lie in the same horizontal plane. The insertion of no ligament is higher than its origin in the uterus, therefore these ligaments do not act as sus-

pensory ligaments where the uterus is in its normal position. When, however, the uterus for any reason falls an inch or more below its normal level the uterine ligaments become suspensory in character." And the second argument as follows: "If the cervix be caught with a tenaculum when the woman is on her back the uterus may, with but very little force, be drawn downward toward the ostium vagina to the extent of one or two inches; and similarly, by a slight digital pressure on the cervix, the uterus may be pushed upward from one to two inches above its normal position." After thus demolishing the suspensory function of the uterine ligaments the author proceeds to enunciate the theory that the uterus simply floats in a closed vessel (the pelvic and abdominal cavities) at a level that is consistent with its own specific gravity. In connection with this he says that if for any reason the specific gravity of the uterus were increased it would sink below the level at which it is normally situated. We might, however, have these conditions reversed and ask what would happen if the specific gravity of the abdominal fluid should suddenly be increased? Would the uterus attempt to soar into the abdominal cavity and tug at its ligaments to get free, like a kite at its string?

It seems to me that against this theory not only must we return the Scotch verdict of not proven, but also advance the opposing proposition that it is founded upon a false statement of facts. I do not see how the author could have fallen into so erroneous a statement regarding anatomy as to say that when the woman is erect the insertions and origins of the various uterine ligaments lie in the same horizontal plane. This certainly is not true regarding the utero-sacrals in any position of the uterus, nor does it apply to the round ligaments if you regard the point of passage at the internal inguinal ring as the point of traction or mechanical origin, as we justly may. This point marking the origin of the upper border of the broad ligaments makes these ligaments also an exception to the fundamental statement on which the Penrose theory is based.

The argument that because the cervix can be drawn down by a tenaculum and pushed up by the finger, therefore the ligaments do not have a suspensory function is entirely negative. The same fact can be used to prove that the ligaments being expansile and contractible, because of their muscular structure, permit of such mobility, and eventually by contraction restore the cervix to its normal position and retain it there.

The specific gravity theory is a pure hypothesis. We are not

told what the specific gravity of the uterus is, nor that of the abdominal fluid. Neither are we informed of the specific gravity of the bladder and its contents, nor that of the rectum, the intestines, or any other surrounding tissue. To get some approximate idea of the density of a liquid that would float a uterus I dissolved salt in water, increasing the amount of salt till it would float a uterus with its appendages, when I found the specific gravity of the solution to be 1058. I have not been able to find any statement of the sp. gr. of the abdominal fluid nor have I been able to secure enough to take its sp. gr., but I have no idea that it is as dense as 1058. These figures are not absolutely correct for the uterus experimented with had been kept four days in a 4 per cent. solution of formalin, whose sp. gr. was 1006. This may have given greater density to the uterine tissues. Before another meeting I hope to work out this problem more satisfactorily.

The most convincing argument from a pathologic standpoint in favor of the ligaments providing the sustaining force of the uterus is to be found in cases of prolapsus or retrodisplacements in virgins. In these instances all the forces (exclusive of the ligaments) that are claimed to hold the uterus in place are intact, the perineum, the floor of the pelvis, the vaginal sphincter, the atmospheric pressure, the specific gravity of the abdominal fluid, and yet the uterus has come down. At operation it appears that the only tissue that is not normal is the ligaments. Moreover, by restoring the ligaments to their proper length without doing anything to any other tissue the uterus remains in its normal position.

To sum up the whole matter: In my judgment, the uterus is supported and retained in its pose and position exclusively by its ligaments. Each and every one lends a certain influence to this end, but the only one whose exclusive function is that of support is the utero-sacral and that furnishes the principal sustaining power.

One additional function of the utero-sacral ligaments and the muscular fibers at the base of the broad ligaments I might mention. It is connected with the process of parturition and consists in rhythmically lifting the cervical tissue over the head of the child as uterine contractions and muscular pressure force the head and cervix down toward the vulva. Undoubtedly the longitudinal fibers of the cervix act in the same way, but I fancy these ligaments are active agents in this procedure, the process being similar to the slipping of the glove onto the finger.

THE SURGICAL TREATMENT OF GALLSTONES: WITH A REPORT OF SIX CASES.

BY
J. WILSON POUCHER, M.D.,
Poughkeepsie, N. Y.

It is practically within the last decade that the surgeon has become particularly interested in the treatment of gallstones, but happily within that time he has proven master of the situation. Like appendicitis, gallstone disease is a much more frequent and important malady than has been generally supposed. The intricate and delicate construction of the liver and gall-bladder with their various ducts and bloodvessels requires the perfect working of their functions or a serious disturbance of the whole system is apt to follow. That cholelithiasis is of frequent occurrence can be easily proven by following up a large number of autopsies.

While a student under Prof. Virchow nearly twenty years ago, I was impressed with the great frequency of gallstones, and their apparent relation to cancer of the liver and gall-bladder. At present most surgeons contend that in a very large proportion of cases of primary cancer of the liver or gall-bladder, gallstones are found either in the gall-bladder or obstructing its ducts; usually the multiple variety in the gall-bladder.

In Ashurst's exhaustive Encyclopedia published in 1884, Dr. Henry Morris says: "Cholecystotomy, like some other abdominal operations, has long been thought of, rarely performed and strongly condemned."

In 1878 Dr. Marion Sims had planned and performed the first recorded cholecystotomy, but his patient died in eight days.

After him came Lawson Tait, closely followed by about a dozen others. A story related by a celebrated Boston surgeon illustrates the feeling the surgeon had toward this operation fifteen years ago. He relates that an old professional friend from the rural part of New Hampshire came to Boston to consult him, about himself, insisting that he had a gallstone impacted in the common bile duct, and that if it was not removed he should die in one of the severe attacks of biliary colic to which he was subject. However, the operation was not performed, and the doctor soon after died. The autopsy showed a large stone in the common duct exactly as the patient had described it.

Within the last few years, however, so much has been accomplished that the most difficult cases of gallstone have become comparatively easy of diagnosis and operation.

The following indications may be considered as justifying an operation:

1. Frequently recurring biliary colic with or without jaundice, and with or without enlargement of the gall-bladder.
2. Enlargement of the gall-bladder without jaundice, even when not accompanied with great pain.
3. In persistent jaundice ushered in with pain with or without recent paroxysms of pain, where it is probable that there is obstruction of the common duct by a stone.
4. In empyema of gall-bladder.
5. In peritonitis starting in the right hypochondriac region.
6. In abscesses around the gall-bladder or its ducts.
7. In cases where persistent pain may be caused by adhesions from stones that have already passed.
8. In all cases of suspected obstruction of the gall ducts.
9. In all cases of chronic or phlegmonous cholecystitis.

The operation consists in either a vertical incision in the right hypochondriac region over the gall-bladder, or a transverse or elliptical incision extending from the median line near the umbilicus to the cartilage of the ninth rib on a line with the lower border of the ribs, to allow the operator to explore the region of the gall-bladder and its ducts. Stones can be quite easily felt in the common duct, but sometimes if they are in the gall-bladder or cystic ducts, it is necessary to open the gall-bladder before they can be positively demonstrated. The gall-bladder in these cases is usually found distended, and the wall may be either very thin and easily lacerated, or it may be very much thickened. The latter has been the case where it is simply distended in old cases of occlusion of the ducts.

If possible, the gall-bladder is grasped by a tenaculum forceps and drawn well up through the incision. The fluid contents are aspirated and an incision made in the gall-bladder large enough to introduce a finger when it can be easily explored and the stones, if any, removed either by pressing them out by the fingers, or with a ring forceps. It is frequently found that one or more stones are impacted in the cystic duct, and these are often very difficult and sometimes impossible to remove without incising the duct itself. If they can all be extracted and there is a certainty that the ducts are free for the future passage of the bile into the intestine,

the opening into the gall-bladder may be carefully closed (I use chromicised catgut), and the organ returned into the abdominal cavity, and the ideal cholecystotomy has been done. It is, however, better to use careful drainage in every case, leaving the abdominal incision to be closed later. When there is doubt as to the proper discharge of bile through the bile ducts, the opening in the gall-bladder must be brought into the abdominal incision and stitched fast, care being taken to include the peritoneum and deep abdominal aponeurosis as well as the skin.

The operator can then wait, and if there is obstruction of the cystic or common ducts there will form a permanent biliary fistula.

Then, by a second operation a cholecystenterostomy must be done. This can be achieved by bringing a loop of the colon and the gall-bladder together, making an incision $1\frac{1}{2}$ inches long in each and suturing them together by a double row of sutures. The first row coapting the edges of the two openings, and the second row of Lembert sutures bringing the serous surfaces together outside the first. This is a rather delicate and difficult procedure, but a possible and satisfactory one. At the present day another method is much oftener followed, and the gall-bladder and intestine are united by the use of a Murphy button. One ring is carefully stitched into the wall of the gall-bladder, and the other in the incision in the intestine. The button passes the intestine in from 12 to 20 days. In anastomosis without the use of the button, an accident that has befallen me once is closure of the opening by cicatricial contraction, either because my opening was too small or from the fact that the bile drained too easily from the external fistula. This is worth guarding against, because a second operation is annoying, and also very much more difficult, owing to surrounding adhesions. The button, however, cannot be used in all cases owing to the softened walls of the gall-bladder, to a small contracted gall-bladder or to adhesions. In such cases the only alternative left to the surgeon is excision of the gall-bladder and ligation of the duct and cystic artery. In these procedures, and especially where there has been an old cholecystitis, great care should be exercised to avoid the escape of the contents of the gall-bladder into the peritoneal cavity, for it has been conclusively proven that cholelithiasis is of infectious origin due to either the invasion of the colon bacillus, or that of typhoid or even streptococci. In cases where the bile-ducts are pervious, the incision may be safely sutured, but it is much safer to drain it for a time by

properly stitching into the abdominal wall. The fistula will close of itself without any further operation.

In many cases of severe recurrent colic, with or without jaundice, the diagnosis is quite easily made of obstruction of the common bile-duct by one or more stones. In such cases it is necessary to do choledochotomy.

As I have said, such a stone can usually be felt and grasped between the exploring fingers, but is not always easily removed, owing to the almost inaccessible position of the common duct in some cases. The transverse incision is always preferable in choledochotomy and the duct when exposed is freely incised and the stone removed, after which the duct is sutured, when possible. I have seen the duct so deeply buried among firm adhesions and exudations from previous inflammations, that it was only reached and incised after going through several inches of this exudative tissue, and where suturing the duct itself was absolutely impossible. In my case the duct was left open and no trouble was experienced as the surrounding wall of adhesions seemed to completely close the opening which I had made in the duct. In 1898 Dr. Halstead invented a set of little hammers with graduated heads which he used in suturing such cases, but I doubt if they could have been used successfully in my case, owing to the firmness of the adhesions. If the calculus is quite near the duodenal end of the common duct, it is perhaps better to make an incision into the duodenum, and then either incise or dilate the orifice of the duct and remove the stone through the intestine. When a gallstone is impacted into the cystic duct that cannot be pressed back into the gall-bladder, the duct may be incised as in the case of the common duct, and it is usually much more easily reached and entered than the common duct. Nearly all surgeons agree as to the necessity and methods of the operation, and vary very little in technic except as to the closure or drainage of the abdomen.

Healthy bile is not septic, and in small quantities is harmless in the abdominal cavity, but the contents of the gall-bladder in cholelithiasis is rarely, if ever, composed of normal bile. It may be pus, dirty serum, or bile in all stages of degeneration. Therefore, it is safest in all cases where we do not feel absolutely sure of our sutures, or where the ducts are too inaccessible, where the gall-bladder is much shrunken, or its walls so friable that sutures cannot be trusted to hold, to carefully drain. I use a rubber drainage tube carefully packed around by several layers of sterile gauze to protect the peritoneal cavity until the necessary repair has taken

place. After about two days the gauze is removed, and if there is no oozing, the drain is also removed. Whenever there is no obstruction of the ducts, an opening into the gall-bladder will close of itself.

In cases where the incision in the duct in a choledochotomy cannot be closed, owing to the duct being deep in the abdomen or bound down by adhesions or there is a very thick abdominal wall, the same method of drainage may be used or an outlet may be made posteriorly through the posterior hepatic fossa, a pouch behind the right lobe of the liver separated from the peritoneal cavity.

Several of the following cases which I shall endeavor to truthfully report were done early in the '90s, and the technic of the operation was not as plainly laid down for us as it is at the present time.

CASE I.—Woman, 40 years old, had suffered from severe pain in abdomen for many years, and at times could feel a distinct tumor in the right hypochondrium; incision was made over site of the tumor, and a gallstone the size of a hazel nut easily felt within the common duct. The duct was incised and the stone easily moved. Incision was sutured with fine catgut; the abdominal wound closed. The recovery was rapid and uneventful. This was the simplest and easiest case I have ever had the luck to find.

CASE II.—Woman, 42 years old, had been my own patient for ten years, and had suffered for nearly fifteen years with attacks of biliary colic and jaundice. The attacks had become more and more frequent, and were apparently occasioned by the slightest indiscretion of diet. Diagnosis was gallstone sacculated in common bile duct, and stone found in the duct deep down in abdomen, and held down by strong adhesions. The mass consisted of omentum, head of pancreas and seemingly much tissue that did not belong there at all, the product of inflammation and exudation. By passing the left hand under the mass and pressing it up into the wound and by using fingers and blunt instruments I finally reached the duct, but could not separate it from the mass of surrounding tissue. I ventured to cut down upon the stone, and finally made an opening large enough to squeeze it out. It was absolutely impossible to suture the duct, and I let it drop back trusting to the pressure of the surrounding masses of adhesions to close the incision. The wound was closed, a proceeding I would hardly ad-

vocate now. The patient made a rapid and complete recovery, and has since gained fifty pounds.

CASE III.—Woman, 37 years old, had suffered most severe pain for years. There was also at times a large tumor above the gall-bladder. A large stone was found in the common duct which was with difficulty incised and the stone removed. The duct was sutured as well as possible and wound closed as in the last case, but with not such a good result. After twenty-four hours the patient developed a troublesome cough and, to my surprise, coughed up large quantities of bile-tinged expectoration. She soon developed jaundice, and finally died in an extreme condition of cohemia. This might probably have been averted had proper drainage been employed.

CASE IV.—Woman, 38 years old, suffered for many years with attacks of colic; diagnosis of gallstone made; no tumor could be felt owing to the fatness of patient. Incision was made over point of frequent pain, and a distended gall-bladder found, which was aspirated, drawn up into the wound, and incised. It contained about four ounces of a dark muddy-looking fluid, and 116 gallstones varying in size from a grain of sand to an almond. The gall-bladder was then stitched into the wound and a drainage tube introduced. The wound was drained for three days, when the tube was removed, as nothing but clear bile was discharging. A compress was placed over the wound, which closed entirely in about three weeks.

CASE V.—A young lady of 30 years had suffered very much for about two years. Had constant distress in the neighborhood of the gall-bladder and ducts. Had become very much emaciated, and the stomach for long periods rejected all food. Diagnosis of gallstone was made; an incision was made over gall-bladder and extended along lower border of the ribs to explore common duct. Gall-bladder found very little distended, contained only partly normal bile and no gallstones. Examination of the cystic and common ducts disclosed nothing. I was about to close the wound when I felt a small stone almost projecting into the duodenum. I grasped the duct and stone between thumb and finger and after several attempts succeeded in forcing it into the intestine. The wound was closed. The patient did well, rapidly gaining flesh and strength and has been quite well ever since.

CASE VI.—Woman, 43 years old. Had a large tumor in the right hypochondrium; had never had jaundice or colic. Incision made over site of tumor; found gall-bladder very much enlarged

and the wall thickened. Gall-bladder was aspirated, and 9 ounces of clear fluid withdrawn. The wall of the gall-bladder was found to be nearly half an inch thick. The incision was made large enough to explore, when two large stones were found occluding the cystic duct, one of which came away with comparative ease, but the second was started from its resting place with very great difficulty. Owing to the bad condition of the patient, the thickened gall-bladder was stitched into the wound and drained. It was soon apparent that there was obstruction, and that the biliary fistula would be permanent. This patient then absolutely refused any further operation and left my charge in April, 1900. After enduring the fistula for about eight months, she returned to me in December willing to submit to another operation. My idea was to do a cholecystenterostomy by the use of the Murphy button. This I found impossible, as during the previous eight months the gall-bladder had become little more than a fibrous sinus. I then opened this canal and bringing a loop of colon into the wound united the two by a double row of sutures. The wound was left open and packed with gauze. The fistulous opening continued for sometime, but finally with the aid of compresses closed of itself. The patient has since then enjoyed first-class health.

339 MILL STREET.

HYSTERECTOMY FOR INFECTIOUS DISEASE OF THE UTERUS AND UTERINE APPENDAGES.¹

BY

H. C. DEAVER, M.D.,

Visiting Surgeon to Episcopal, St. Mary's and St. Christopher's Hospitals,
Philadelphia.

THIS short paper which I have to contribute I base mostly on the knowledge and experience gained in my own practice. Perhaps in starting out it is best to consider the usual avenues of infection—namely: (1) By absorption into the vascular and lymphatic circulations from some focus of decomposition in the uterine cavity. (2) By direct infection from microorganisms introduced by the physician either in making examinations or in operating in the region of the uterus. (3) Gonorrhea.

The most frequent cause of infection, no doubt, is from decomposition of fragments of placenta, retained membrane, lochia or blood clots. The absorption of the toxins resulting from the decomposition of the above gives the symptoms known as sapremia. When the uterine mucosa has been injured, thereby opening up direct avenues for infection, sepsis may develop, spread at once, and infect the uterine appendages and peritoneum through the lymphatics.

When the infection has extended beyond the uterus surgical treatment of the intrauterine condition does not suffice, and where this treatment alone is practised it is very apt to aggravate the intrapelvic condition. As long as the infection is confined to the uterus alone, our efforts should be spent to prevent its spread; and this infectious condition should be met with by dilatation, curettage and drainage of the endometrium. In the majority of these cases this is a simple procedure. I have found it seldom necessary to exercise any force by use of instruments in dilating the uterine canal. I have always been able to dilate the cervix with my index and middle fingers; and by making pressure with my left hand above the symphysis pubis I thus fix the uterus so that I am able to easily empty it simply with my fingers. I am in the habit of curetting the uterine cavity with broad-bladed forceps covered with iodoform gauze. I think we are less liable

¹Read before American Association of Obstetricians and Gynecologists, Chicago, September, 1903.

to injure the uterine mucosa by this procedure and believe it is less dangerous than the use of the sharp curet. Still, the sharp curet in careful hands, and its thorough application in properly selected cases, have been followed by prompt decrease in systemic poisoning and other grave symptoms.

Where the uterine wall is soft and boggy it is a very easy matter to penetrate it. I have seen cases, brought to me in my hospital experience, where the uterine wall had been penetrated in which there followed a purulent peritonitis and death. In one instance I recall a case where several feet of intestine had been pulled through the rent in the wall of the uterus and strangulated, with gangrene of the intestine following. The majority of cases of puerperal infection are due to the streptococcus, and the resulting invasion of the general system is rapid. For this reason this variety of infection offers a strong indication for early intervention, but we also know that the streptococcus germ in two or three hours may pass beyond the uterus where no curette can reach it. The serum therapy from a theoretical standpoint would seem the ideal treatment, but as yet I have found no value from it.

Unfortunately, this virulent infection is not limited to the placental site or wounded surface. After a time the whole endometrium becomes involved, clots in the uterine sinuses become infected, forming the condition known as thrombophlebitis. The uterine muscle may be riddled with pus through the infection of the uterine lymph spaces, and infection may take place also through the lymphatics of the broad ligament, producing a septic lymphangitis. As a result of this septic condition there is a peritonitis of greater or less severity, with the formation of lymph or pus on the free surface of the peritoneum. The ovaries are often involved through the continuity of the lymph channels, producing ovarian abscess. The fimbriated extremities of the Fallopian tubes become infected, producing pyosalpinx. The characteristic general result of this form of infection is septicemia.

Unfortunately, again, the remote lesions which we might expect from such a condition are septic pneumonia, endocarditis or nephritis. In such cases the post-mortem findings are pyogenic organisms in the walls of the uterus, the pelvic lymphatics, the blood vessels and the complicating foci. When the uterus becomes infected during examination or in operations the same pathological conditions may take place, but not usually to such a marked degree. Fortunately, gonorrheal infections confine

themselves chiefly to the endometrium and lining membrane of the tube; but, if infection reaches the fimbriated end of the tube a local peritonitis results, the tube becomes closed by agglutination of the peritoneal surfaces, and the result of the inflammation is at first purulent with the formation of purulent salpingitis. A greater or less degree of peritonitis is always present in these cases and all the pelvic viscera may become involved, producing dense adhesions. After the acute inflammatory symptoms subside the patient may be comparatively comfortable and apparently well for a considerable time, then there may be a renewed attack with a repetition of symptoms followed by the formation of strong and dense adhesions with involvement of the uterine muscle.

The symptoms arising from infection of the uterus depend upon the virulence of the infection, nature of the tissues attacked and the resistance of the organism to the absorption of septic products. The most common type of infection is the simple sapremia from the absorption of toxins produced by putrefying blood clots and retained secundines. The symptoms of infection usually appear about the second or third day after labor, but may not come on until the tenth day or even later. They are usually ushered in with a chill, fever rising from 102° to 104° F., with a pulse of 100 or more. On local examination the uterus is usually found to be tender over its body, with tenderness extending to one or both sides along the course of the broad ligaments. The early recognition of the condition and prompt operative treatment by the thorough cleansing of the vagina and uterus and establishing uterine drainage with iodoform gauze, together with drainage of the posterior cul-de-sac by free vaginal incision and the introduction of gauze, will usually arrest these symptoms and prevent further infection.

Where the infection has passed beyond the uterine cavity, involving the lymphatics and bloodvessels in one or both broad ligaments, in addition to these symptoms we have those of a pelvic peritonitis—namely, rigidity of the lower abdominal muscles with tenderness and distention. Vaginal examination reveals tenderness and rigidity of the vault of the vagina with induration, or a mass of exudate in one or both broad ligaments. It is in the latter class of cases that a fairly large collection of pus forms in the pelvis and lower abdominal cavity. Every one is agreed that here the surgical principle of giving exit to pus wherever and whenever it exists should be adhered to, and yet, it is in these very cases that a conservative course finds its justification. If the

collection of pus is so situated that it can readily be evacuated by an incision in the vagina, or above either of Poupart's ligaments, so that the peritoneal cavity is not entered, no time should be lost in making it.

The practice of aspirating these cases through the vagina I have always considered a most dangerous procedure, as the needle may enter a knuckle of intestine. A better procedure is to freely open the cul-de-sac by an incision through the vaginal vault and thus be able to see as well as feel. In a certain percentage of these cases the collection is so placed that it cannot be reached by either of these incisions. The fact that a pelvic abscess has formed shows that the inflammatory infectious process is localized and judicious delay is therefore not attended with any great danger. We know that the pus in acute puerperal sepsis is highly virulent and the slightest soiling of the peritoneum is almost certain to be followed by general septic peritonitis. I am in the habit of keeping these cases under close observation in the way of careful feeding and not purging them at all, but moving the bowels by gentle enemata, until the general inflammatory symptoms subside. If the pus collection is in the upper part of the broad ligament and if doubtful whether it can be reached by incision above Poupart's ligament, I make an incision in the median line at a point just above the upper margin of the mass. I first of all carefully inspect the relation of the mass to the abdominal walls and viscera, then place gauze packing above and to each side of the mass, after which the abscess may be evacuated without danger of soiling the peritoneal cavity, and the collection mopped out with iodoform gauze, while exercising care not to destroy any adhesions.

Where the infection has passed into the tube forming a pyosalpinx or tubo-ovarian abscess, I always operate through the abdominal route, tying off the ovarian vessels as close to the pelvic wall as possible, and rapidly excising the tube and ovary with scissors, following the incision right into the horns of the uterus and closing the resulting wound with a continuous suture. I then drain with gauze, being especially careful to place the gauze along the line of sutures.

There is another class of cases, the most unfavorable of all, where the infection manifests itself as a phlebitis of the uterine sinuses and veins of the broad ligament, and is associated with small and multiple abscesses of the uterine walls, as well as with acute peritonitis. Here the constitutional symptoms are pronounced; rapid and weak pulse, high temperature, with moderately

distended, exquisitely tender abdomen, and with diarrhea. Associated with this infectious condition there is an endometritis giving rise to an offensive discharge, often blood stained. Local examination has here revealed a hot vagina, an enlarged, painful and movable uterus, which offers more or less resistance to touch, and this condition, with the absence of fulness in either the retrouterine or vesicouterine pouches is suggestive of infiltration. It is in this grave class of cases, which I have just described, that the question of hysterectomy presents itself.

If, in spite of the early treatment which has been outlined in this paper, the patient grows more profoundly septic, as manifested by the pulse, high temperature and general constitutional depression, and upon examination no exudate can be detected in the pelvis to account for increased septic manifestations, and it is, furthermore, evident to the experienced observer that the patient is losing ground rapidly, I deem it a justifiable procedure to open the abdomen and be guided by the condition there existing. In most of these cases it will be found necessary to perform total hysterectomy. I am convinced that an early operation can save some of these highly virulent and rapidly fatal forms of septic peritonitis. I would say that this grave pelvic condition is similar to the fulminating form of appendicitis, and surgical intervention, to be successful, must be prompt in this class of cases, just as it must be prompt in gangrenous and perforating forms of appendicitis without limiting adhesions, for a delay of some hours may turn the balance against a successful termination.

When infections of the uterus occur from gonorrhea and dermoid cysts and from intraligamentary and ovarian cysts, I am in the habit of performing a supravaginal hysterectomy. In the great majority of cases of gonorrheal infection, especially where there have been repeated attacks of pelvic peritonitis, adhesions take place between the surrounding viscera, and especially of the tubes and ovaries to the posterior layers of the broad ligaments, and these attachments are so dense and strong that it is impossible to dislodge them without tearing the posterior layer of the broad ligament, as well as the vessels therein. When we leave raw surface exposed we favor the formation of new adhesions to the omentum and intestines, which local mischief too often produces chronic invalidism, and at the same time exposes these unfortunate patients to the risk of intestinal obstruction, as well as to a secondary operation. These remarks apply not only to

infection from pyosalpinx, but to infection arising from dermoid cysts, suppurating ovarian and intraligamentary cysts.

Supravaginal hysterectomy in badly infectious cases with dense adhesions, I consider the ideal operation, for it thoroughly removes all of the diseased condition and we can leave the floor of the pelvis with a serous covering by neatly stitching the apposed serous surfaces together.

1534 NORTH FIFTEENTH STREET.

TRANSACTIONS OF THE CHICAGO GYNECOLOGICAL SOCIETY.

Meeting of January 15, 1904.

The President, DR. EMIL RIES, in the Chair.

CALCULUS REMOVED FROM THE URETER.

DR. LOUIS E. SCHMIDT.—Seven years ago Mrs. P., aged 35, suffered a sudden, typical attack of renal colic and at intervals of about a year these attacks have been repeated. In all but the first attack considerable pain followed in the right iliac region. Some four years ago a surgeon made a ventral fixation to relieve this condition. Skiagraphs taken shortly after this time showed a stone, $\frac{5}{8}$ of an inch long and $\frac{1}{8}$ inch in diameter, in the lower portion of the right ureter. One year ago the stone was shown in the same position. With the object of removing this body the right ureter was catheterized. About 7 cm. from the ureteral orifice a slight obstruction was felt. The catheter was allowed to remain for two hours in order to make examination of the urine from the two kidneys in case an operation became necessary. At the end of this time 15 c.c. of albolene was injected into the pelvis of the kidney and 5 c.c. injected as the catheter was being withdrawn. Colicky pains were immediately felt. These continued intermittently for eight days when the stone was passed per urethram.

There are three other cases recorded of the removal of stone from the ureter in this manner so that it is well to remember the possibilities of the method.

DR. GUSTAV KOLISCHER.—The report of this case adds to my conviction that the method employed by Dr. Schmidt and which I first devised some ten years ago, can be accepted as one of the standard methods for dealing with stones in the ureter. This is important, as cutting operations for removal of stones impacted in the ureter are still very dangerous. This has also been the experience of Leonard and Bevan. I have now a patient

who was the carrier of a concretion in the pelvis of her right kidney. Typical symptoms as renal hemorrhage, renal colic and so on appeared at more or less regular intervals. The patient refused to entertain the idea of an operation. I therefore made the attempt to dislodge the stone from the renal pelvis into the ureter by means of injections. Interference was indicated on account of the profuse secretion of pus from the renal pelvis. The first insertions of the thickest catheter which the lumen of the ureteral opening allowed came off quite smoothly and no obstruction or obstacle inside of the ureter was to be found. After two injections of albolene the patient had an extremely severe attack of renal colic with pains radiating into the iliac region. Two days after this, the inserted catheter met a decided obstacle in the lower part of the ureter which, under slight pressure, was overcome. Dr. Bevan was present at this occasion and I was in a position to demonstrate the condition to him. Albolene was again injected, this time in the ureter only. The next day there was an intense attack of ureteral colic, the pains being confined to the right lower quadrant of the abdomen. A skiagraph taken after this attack shows the shadows of two concretions in the lower half and in the lower third of the ureter. There is no shadow of a concretion in the well pronounced shadow of the kidney. Last week the patient passed two tiny fragments, but the stones are still in the same location. I do not doubt that they will be passed spontaneously or after a few more treatments. Casper and Housmann have each reported one case of ureteral impaction of stones successfully treated by my method.

DR. J. CLARENCE WEBSTER reported a case of

OVARIAN PREGNANCY,

and showed microscopic slides. (To be published later.)

DR. EMIL RIES.—It is difficult to form any adequate idea of such an extremely rare condition as ovarian pregnancy from these few specimens in a few minutes, and it would be desirable to see many more and to have more time to devote to them.

These interesting cells along the blood sinuses, and which are seen in the tissue between the sinuses in some places, in some instances show more than one nucleus. But I have seen only this one field. It would be interesting to find out whether there is some outgrowth of syncytial buds or so-called serotinal giant-cells as in the normal placenta of the uterus and whether there is any relation between them. Dr. Webster will doubtless make further investigations and elucidate that question completely.

DR. WEBSTER.—I would like to say that in Thompson's specimen there was a tendency towards the development of discoid placenta, that is, to localization with a definite area, with a tendency to the continued development of that portion of the chorion termed the frondosum, and to degeneration of the remaining portion. In my specimen there is as much placental tissue on one side as on the other. Evidently there is complete chorionic de-

velopment. There has been no differentiation. Of course, this specimen represents a good deal of destruction; the large swelling being due to extravasated blood in the intervillous space, tearing up the villi.

I should like to point out one more very interesting feature. Here there is a perfectly formed amnion, but no embryo, whereas in Thompson's specimen there was no trace, according to his description, of amnion, but the embryo was present. I do not know of any similar observation as regards either ectopic or uterine pregnancy. The amnion is a much more resistant structure than the embryo, and may last long after disappearance of the embryo. Why the latter existed in Thompson's case I am at a loss to know.

With regard to the cells, which I have studied considerably, the many sections I have examined do not in any way suggest syncytium. There is a definite cell outline, and when cells are massed together, the outline may usually be distinguished. In the great majority of cases these cells have one nucleus, and in a number of instances two nuclei. I should say they are not to be confounded with lutein cells in any way. I have compared a large number of specimens of corpora lutea from other specimens, and these cells are larger than the largest lutein cells I have ever seen. Their structure is different. There are no spaces in the cells such as we find in lutein cells, which have been treated with the various reagents, owing to dissolving out of the yellow particles, and the nuclei are different from those found in the cells of corpus lutea.

The Secretary read an abstract of a paper presented at the previous meeting by DR. FRANK W. LYNCH, of Baltimore, entitled,

CESAREAN SECTION AND SERIOUS DYSTOCIA FOLLOWING VENTRO-FIXATION AND SUSPENSION.

The objects of the paper are:

1. To call attention to serious complications which are encountered during pregnancy and labor following ventro-fixation, and sometimes after ventro-suspension.

2. To report in detail two cases of dystocia, one following intentional fixation, and the other fixation intended for suspension.

3. After studying cases in literature, to inquire whether ventro-fixation or ventro-suspension is justifiable from the obstetrical point of view.

CASE I.—Woman, 25 years; 3 normal labors; 18 months after last labor complained of gynecological symptoms. Ventro-fixation was performed and one month later single ovariectomy. Eight months later became pregnant. Entered hospital when 8 months pregnant on account of pain in region of scar which incapacitated her from working. Was confined to bed greater part of 11 weeks prior to delivery on account of this pain, and required opiates and sedatives daily. The scar was retracted, the cervix displaced posteriorly at the level of promontory, and the

child lay transversely. The uterus was so irritable that she was frequently thought to be in labor, thus preventing operation for release of adhesions. At onset of labor child lay in L. O. I. T., head not engaged, and cervix was above promontory. After 15 hours hard pain, cervical canal was 3 cm. in length and dilated to admit but tips of 3 fingers. Delivery became necessary and Cæsarean was considered. Harris method of dilating cervix attempted and accomplished with greatest possible difficulty, version and extraction also extremely difficult. Pain continued after puerperium, and nine weeks after delivery the adhesions were freed, 3 silk worm gut sutures being found holding the fundus to the abdominal muscles.

CASE II.—Woman, 37 years; 9 normal births, 2 miscarriages. A competent operator "suspended" the uterus when one month pregnant, the condition being obscured by the symptoms. Excessive vomiting throughout pregnancy; pain in bladder and scar from the sixth month. After 7 months was bed ridden on account of pain and exhaustion. Gradually lost weight and strength, her weight falling to less than 100 pounds. Her height was 5 feet 4 inches. Came under my observation 10 days before labor, at that time having a streptococcus tonsillitis and pharyngitis, the pulse ranging to 120 and temperature to 102°. She had a "pigeon breast" and dilated heart. Uterus was enormously distended, the abdominal scar retracted, and the cervix pulled up above level of the promontory and displaced backwards. At the time of labor the cervix rose to level of the fourth vertebra and could be felt only with entire hand in vagina. The placenta was palpated low and anteriorly and covering pelvic inlet, thus precluding Dührssen's operation. Conservative Cæsarean performed shortly after onset of labor, pulse at that time 144. Adhesions 4 or 5 cm. thick, and 5 or 6 cm. long were found to fix fundus to upper angle of scar. Twins delivered weighing 4¾ and 3½ pounds, 45 and 43 cm. in length. Smaller child died on 3d day. Mother on 6th day, presumably from exhaustion, peritonitis and obstruction excluded.

Both cases presented similar signs and symptoms; retracted scar and displaced cervix, nausea, pain in region of scar confining them to bed for last 2 months. One case followed intentional fixation and the other suspension converted by vascularity of uterus, into fixation. Neither case had tumor mass of uterine muscles covering brim which has frequently been noted.

Complications noted in cases in literature:

A. During pregnancy.

1. Marked retraction of scar.
2. Constant hypogastric pain.
3. Retraction of cervix posteriorly into abdominal cavity.
4. Formation of tumor mass from anterior uterine wall, obstructing pelvic inlet.
5. Excessive thinning of posterior uterine wall.

6. Abortion or premature labor.
7. Persistent and excessive nausea.
8. Prolongation of pregnancy.

B. During labor.

1. Inertia of uterus due to excessive thinning of its walls.
2. Dystocia due to tumors.
3. Dystocia due to inability of cervix to dilate.
4. Increased frequency of abnormal presentation.
5. Rupture of scar of fixation.
6. Rupture of uterus.

Noble (1896) in a paper favorable to ventro-suspension and fixation, collected 56 cases of pregnancy following 808 operations in America where at least one ovary remained. At the time of his report 6 had aborted, 43 had gone to term, 7 were not yet at term; of the 43 at term, one died after Cæsarean, and of the 7 not yet at term, we found that one other died after section.

Dorland later, in 1896, collected 179 pregnancies following these operations. Of these 179, 14 per cent. aborted, 9.5 per cent. were not yet at term. Of the 137 cases at term, only in 38 per cent. of cases was both pregnancy and labor uncomplicated, although pregnancy alone was normal in 67 per cent., and labor alone was normal in 62 per cent.

In the 137 cases, was noted during labor, serious dystocia in 23 cases (forceps delivery 13, version 9, Cæsarean 1). Abnormal presentations 9 cases (6 transverse).

Cervix was at level of or above promontory.....	10 cases
Threatened rupture of uterus	9 "
Post partum hemorrhage	2 "
Retained placenta	3 "

The fetal mortality was 18 per cent., and the maternal 1.5 per cent., leaving out of consideration two deaths not ascribed to the result of the operations.

The author has collected 21 cases of Cæsarean section indicated as a result of these operations. Many were found in papers favorable to the operation. While collecting these he observed reports of many forceps and versions and 10 ruptures of the uterus. Analyzed these cases show 20 cases in which the numbers of pregnancies was given:

4	were pregnant for the first time.
4	had borne one child.
4	" " 2 children.
3	" " 3 "
2	" " 4 "
1	" " 5 "
1	" " 7 "
1	" " 9 "

Twelve cases, in which time at which membranes ruptured:

9	at onset.
1	after 4½ hours labor
1	" 14 " "

Seventeen cases in which duration of labor is given, before resorting to Cæsarean:

2	cases	after	4	hours	labor	pains.
4	"	"	8-12	"	"	"
4	"	"	20-24	"	"	"
2	"	"	2	days	"	"
2	"	"	4	"	"	"
1	"	"	5	"	"	"
1	"		2 weeks	after	rupture of membranes, and	
					after 24 hours hard labor.	
1	"				before onset of labor, and after vain efforts	
					to induce it	

Nineteen cases, the position of cervix given; all above the level of the promontory and closely approached the spinal column. Two cases so high that it could not be reached by the fingers.

All pelves normal or slightly contracted, save one.

Seven cases subjected to vaginal manipulations before resorting to section.

Presentation of fetus:

Transverse	15
Vertex	3
Breech	1
Twins	2 (presentations not included above)

Method of Operation.—Porro, 6 cases, 3 deaths; conservative, 14 cases, 4 deaths; 1 fatal operation, method not stated.

Mortality.—Maternal, 38+ per cent.; fetal, 44.5 per cent. (data being given for only 18 cases).

Majority of these cases were intentional fixations, but it may be that other operative procedures carried out at the same time tended to make denser scars than was intended. Some, however, were intended for suspensions.

Various causes may convert what was intended for suspension into fixation, the most important being excessive vascularity of uterus. We have observed the following cases in which dense adhesions followed attempted suspension.

(a) Case II here reported, intended for "simple suspension."

(b) Case "suspended" when one month pregnant, dermoid cyst being removed at same time. Dense adhesions resulted, which however, stretched and prevented serious dystocia.

(c) Case, multipara, simple suspension. Firm adhesions did not stretch and prevented fundus from rising. The pelvis was abnormally large, and thus compensated, the head entering pelvis at eighth month; at time of labor cervix was protruded from vulva and dilated in view of attendants.

(d) Case. Suspension attempted two months following delivery. The sutures cut through, and vascularity causes extensive adhesions, resulting in fixation.

(e) Case. Suspension converted into fixation by cicatrix following infection of sutures.

Anatomical condition noted in late months of pregnancy following fixation results, because the fundus is closely held down just above the symphysis, and the uterus develops at the expense of the posterior wall, thus pulling the cervix out of the pelvis. In many cases the anterior uterine wall does not dilate, and forms a tumor mass obstructing the inlet. At the time of labor, dilatation of the cervix is effected very imperfectly, if at all; since the presenting part and the bag of waters do not impinge upon the displaced internal os, but exert their pressure upon the lower anterior uterine wall. Thus unless operative interference is carried out, rupture of the uterus becomes imminent.

The diagnosis of the conditions can be made out by palpation of short, dense adhesions running to the retracted abdominal scar, locating the fundus by palpation of the round ligaments, and by palpation of the cervix dislocated posteriorly, which dislocation becomes accentuated during the progress of labor.

Treatment of the Condition:

1. *Induction of premature labor.* Objections: (a) Tremendous fetal mortality; (b) does away with chance of spontaneous delivery at term; (c) difficulty in performing it where required on account of position of cervix, and great chance of infection.

2. *Laparotomy to free scar.* Theoretically indicated when pain is great and nearly constant, and anatomical conditions indicate the danger of serious dystocia.

Objections: (a) Difficulty of selecting time when labor does not seem imminent, as the uteri are so irritable that the patients most frequently go into false labor without apparent cause. (b) Inadvisability of allowing labor with a freshly formed abdominal cicatrix. (c) Difficulty of covering area denuded of peritoneum, caused by release of adhesions, without provoking labor.

Cases in Literature:

One which bled so profusely that the Cesarean had to be performed to prevent woman from bleeding to death.

One, erroneously reported in literature as a successful case. The adhesions were released, and labor immediately followed. After many hours of labor the cervix had not progressed in dilatation. Manual dilatation was attempted; a difficult version finally performed, the aftercoming head resisted extraction until perforated, the woman contracted peritonitis from which, however, she finally recovered.

3. *Dührssen's vaginal Cesarean.* Objections. (a) Low implantation of placenta as in our case II; (b) danger of hemorrhage and infection; (c) requires operation to free the adhesions.

4. *Cesarean section at onset of labor* without attempting vaginal maneuvers is probably method of choice, in suitable surroundings, in cases which you can allow go to term and in which the anatomical conditions indicate dystocia so serious that forceps or version would not suffice. Objections: Patients come to opera-

tion in poor condition, bed ridden for months by constant pain which requires opiates and other remedies depressing the vitality.

Are these operations justifiable upon women likely to become pregnant?

1. These collected cases represent but a small proportion of the actual dystocias. No attempt was made to collect the cases which were finally delivered by difficult forceps or version, nor the ruptures of the uterus, ten of which were found while collecting the "sections."

2. Admitting that they form but a small percentage of the total cases operated upon, the records show that serious dystocia is most frequently noted in cases that become pregnant.

3. The material mortality was 38+ per cent. for 21 reported Cesareans, 44.5 per cent. for the child in the 18 cases giving the necessary data.

4. The difficulty of limiting the adhesions in ventro-suspensions, causes it to be considered together with the intended fixations.

5. Is it right to subject a woman to the serious danger of life for a condition which *may* cause but more or less discomfort?

In view of the above we believe that ventro-fixation should be abandoned upon women likely to become pregnant, and that it is questionable whether ventro-suspension should be employed.

In cases which demand operative interference, which will prove to be the most suitable cannot as yet be definitely predicted, though it seems to me that some of the procedures which aim to maintain the organ in position by shortening the round and the utero-sacral ligaments will eventually prove to be the operation of choice. Possibly Alexander's operation may prove ideal when the uterus is movable, but when it is adherent the abdomen must be opened to free it, and under such circumstances some intra-abdominal method of shortening the round ligaments would appear most rational.

The discussion on this subject was opened with a paper by DR. FRANKLIN H. MARTIN, entitled

A RÉSUMÉ OF THE ABDOMINAL METHODS OF SUSPENSION AND
FIXATION.¹

DR. HENRY P. NEWMAN followed with a paper entitled

PLASTIC SURGERY OF THE FEMALE GENERATIVE ORGANS.²

The general discussion was opened by DR. ALBERT GOLDSPOHN, who said: Dr. Lynch, in his paper, presented but two cases as a basis for condemnation of certain operations performed for retroversion of the uterus. The medical literature of the world contains many other cases. It is our business this evening, therefore, to aggregate this one case together with some others.

¹See original article, page 433.

²See original article, page 470.

Four and a half years ago, before the Columbus meeting of the American Medical Association, I stated two fundamental principles of propositions, and I think successfully defended them at the time. They were these: As far as fixation operations of the uterus are concerned, these fixation procedures are diametrically opposed or antagonistic in their interests to the interests of the uterus in gestation and labor. I mean by this: If vaginal fixation or ventro-fixation is made, and recurrence of the retroversion does not occur after labor, then that operation has entrained the uterus or compromised its interests in labor. If, on the other hand, the operation is made in such a manner that it cannot interfere with labor, then it will be correspondingly worthless in permitting a return of retroversion very soon or in altogether too large a proportion of cases. Second proposition: It is not possible for any operator to determine how strong an artificial ligament he will get. He may make an apparently innocent sero-serous junction to get a ligament composed merely of a little band of peritoneum that might be innocent so far as gestation and labor are concerned but he is very liable to get something entirely different from exigencies which were partly alluded to by Dr. Martin, and all of which were stated in my address at that time, *Jour. Amer. Med. Assn.*, July 22, 1899, to which I must refer anyone for anatomical proof. These two fundamental propositions or anatomical facts here mentioned, no one at that time attempted to gainsay, and I challenge anyone to-night to deny them. Therefore, when an operator treats a retroversion of the uterus by a fixation operation, his patient cannot be assured of what the results will be. They may be innocent or entirely different, and for these reasons these fixation operations should be avoided in all women who retain any capacity for conception. Now, ladies and gentlemen, those were my conclusions four and a half years ago, a priori, upon anatomical grounds, only perhaps a little influenced by the bad fruits of this kind of surgery at that time, already appearing upon the Continent in Europe. It is particularly pleasing to me, therefore, so soon to have a man get up, as Dr. Lynch did in his paper, and repeat the sum and substance, if not my words, cautioning against the use of these operations from disastrous experience, and, furthermore, to have this gentleman come from Baltimore, which we know to be the principal stronghold of ventro-suspension, first and last.

Now, our duty evidently is to weigh in the balance all the different operative procedures, and if I may be allowed to refer to them, I will say as regards ventro-fixation that, except for sterile women, the technique of Leopold and Czerny has been definitely abandoned, I trust. Furthermore, that vaginal fixation is almost abandoned by the body of the profession, and is done only by a few of its fathers, among them Dührssen and Mackenrodt, who out of senseless fondness for their destructive child, have changed from one technique to another, and to a third, and then Mackenrodt back to the first method, in a desperate effort to save that

child from death. Any man who makes a vaginal fixation in the case of a woman who has fair conceptive ability, should be seriously questioned as to his knowledge or his integrity, or both, particularly if he does this because he can gain the consent for the operation more easily from the blind patient, who has a prejudice against external incisions.

I will exclude from this discussion Dr. Martin's operation with an autoplasmic ligament, and will not attempt to sit in judgment upon it, but let him announce the results. I wish to say, however, that he is unwise in aggregating his operation with ventro-suspension, as otherwise performed, because the so-called artificial ligaments developed by sutures and adhesions are not ligaments at all but pathologic bands with all their evil characteristics. This latter procedure is also doomed to death. It is dying hard, because it has been done more than any other operation for this purpose. It is dying hard, chiefly because it is easy to do; and this feature is far too influential with some operators. Ventro-suspension, if we will honestly judge of its fruits or results from the literature, too frequently permits of return of displacement. The reports as given by Kreutzman, Gradenwitz, and others, are that it too frequently gives rise to a metritic uterus, either from the sutures, in it, or the adhesions, or something,—the metritis necessitating a second operation. Subsequent hysterectomy has been required altogether too frequently. As Dr. Martin has stated, the ligament that was intended to be an innocent affair, in spite of the operator's will and best technique, has resulted in a firm fixation that caused disastrous dystocia, etc., so that eight cases of Cæsarean section were required in 170 odd labors that he collected. Altogether too much when we consider all the other evils that ensued. For instance, at this time there are certainly not less than twenty authentic cases of intestinal obstruction from interference with the intestine by this ("artificial ligament") pathologic band, most of them having resulted in death.

Again, this operation has not stood the double test of pregnancy (*i.e.*, permitting return of displacement in the majority of cases after labor). I challenge the numerous operators who have been performing these ventro-suspensions to go after their cases, examine those who have had labors subsequently, and give us the correct anatomical reports as to the position of their uteri. I have challenged these otherwise noted gentlemen repeatedly before large assemblies to do this. But they evidently dare not report the results gained by actual examinations. A year and a half ago ventro-suspension operators reported only seven cases of women who were observed and examined after labor, and in four of these there was a return of the retroversion. In view of these facts, I have no hesitation in declaring from what we now know, that there is but one question proper before the profession to discuss in regard to retroversion surgery in women who can conceive, that is, *how to deal with the round ligaments.*

These artificial ligaments produced by needle and suture certainly belong to the shelf, as of historic interest only!

When we come to deal with the round ligaments, there are certain all-important, controlling, incontrovertible facts, chiefly anatomical, and they are unfortunate. The first unfortunate fact is that the round ligaments are not of even strength throughout, but that they taper outward, and are, according to one investigator, from six to nine times stronger at their uterine origin than at the ends of the ligaments where they pass into the inguinal rings, extraperitoneally but intra-abdominally. Another unfortunate anatomical fact is that by abdominal section or median laparotomy, it is not possible to get at this terminal weak end of the round ligament. Anything we attempt to do upon the round ligament by laparotomy, vaginally or ventrally, deals with the strong portion of the round ligament in the abdomen and cannot deal with the weak part which, above all things, needs to be strengthened or eliminated. All this shortening of the round ligaments by laparotomy or through the vagina consists of doubling up of the thick ends, which never did stretch and never are in danger of stretching, while the distal weak extraperitoneal ends of the ligaments that are feeble, that have stretched and will stretch again, remain as weak as ever. These fundamental anatomical facts lie as an unfortunate curse upon all techniques of shortening the round ligament that are possible to be done, via ventral or vaginal laparotomy. In view of these unfortunate facts, we need to get at the terminal, useless, feeble ends of the round ligaments in order to get both harmless and permanent results and to do that we have to attack them by the inguinal canals from without. There is no other way; and the operations that have been done on this plan, even the simple Alexander operations, imperfect and superficial as they were, produced results, so far as the cure of the retroversion is concerned, transcendently better and more permanent than anything done upon any other plan.

That inguinal shortening of the round ligaments, if thoroughly done, is anatomically by far the most ideal procedure, no one will deny who knows anything about the anatomy of the parts; and that it is the only operation for this purpose that has so far given overwhelming proof both of its harmlessness and of its permanent results (beyond subsequent labors), no one can honestly deny who is conversant with the literature on the subject during the last five years. For instance, in June, 1902, all the host of ventro-suspension operators out of their many thousands of cases reported, together, seven women only who had been really examined after a subsequent childbirth, and in four of them the uterus had again become retroverted; while ten inguinal operators (comprising seven in Germany and Switzerland, and Drs. Burrage, Edebohls and myself in our country) had collectively reported 80 cases of inguinal shortening of round ligaments, that had one or more children subsequently and were later examined. In all these cases the uterus was found remaining in

normal position except in two cases which ought not to be counted, because the operation was erroneously done for prolapsus uteri, which is a contra-indication for the Alexander method because of the elongation of the sacro-uterine ligaments.

Therefore as this round ligament operation is so much more harmless and efficient than all others, it is our duty to give this superior benefit of inguinal shortening of the round ligaments to as large a class of women as we possibly can, and that that can be done is very natural and feasible as my clinical results have demonstrated in many cases.

But the simple Alexander operation, which I did myself about a hundred times before I had developed something better, is too superficial and too imperfect a procedure. It is applicable to only a small number of the simplest cases. It is too superficial and imperfect for the following reasons: (1) It does not admit of sufficient detachment of the round ligament from the broad ligament, in at least one out of every five individual ligaments shortened. Traction upon the round ligament then is applied directly to about the middle of the broad ligament and indirectly only to both the pelvic wall and the uterus about equally. When in the simple Alexander operation the round ligament has been drawn out seemingly abundantly or as far as possible, by extraperitoneal dissection,—if then an index finger be passed through a little slit in the peritoneum near the ligament, into the pelvis against the fundus uteri and the round ligament is then drawn upon, it will impart very little and often no forward movement to the fundus uteri at all, because of the condition described, which is found to be so in at least one out of every five ligaments in the simplest cases without adhesions. This fact cannot be known nor corrected unless you introduce a finger as mentioned. Secondly: If the same ligament which you have thus drawn out well is drawn upon rather tensely, and fixed in the inguinal canal without having been liberated from the peritoneum that envelopes both it and the tube together, you will frequently draw the tube into the abdominal wall and kink it there. The injury resulting therefrom is evident. I have demonstrated this condition repeatedly to gentlemen who were looking on during the operation,—showing the need of intraperitoneal manipulation. Thirdly: There are many retroversions in which the uterus and as far as can be made out, the ovaries and tubes also, are freely movable. But a finger in the peritoneal cavity discovers that the end of the tube and ovary are nevertheless encumbered by adhesions, which are practically always severed by touch and manipulation without sight, by all operators and in all forms of abdominal section. These adhesions remaining, as in the simple Alexander operation would counteract the shortened ligaments, for one thing, and make a more or less suffering patient for another thing. The same is true of cystically degenerated ovaries remaining without resection. There are other reasons, why this simple Alexander operation without intraperitoneal digital sight

and work is insufficient, but the ones I have mentioned are sufficient ground why we should explore the related internal parts through the naturally present and open internal inguinal ring, in connection with every round ligament shortened by that route as well as by others.

Fortunately, the internal inguinal ring is located anatomically exactly in front of the usual fixation point of the ovary on the upper side of the broad ligament. The ovary hangs and all we need to do is to swing it around, and it rests in the inguinal canal. The ovary can be drawn out of the stretched inguinal ring more easily than it can be through any other opening of equal size that may be made in the pelvis or abdomen. This ring never requires to be enlarged by cutting. You will be astonished how you can introduce the forefinger down to the insertion of the sacro-uterine ligaments upon the uterus, sweep across the posterior surface of the uterus, and detach any adhesions there that may be present, bring it back along under the tube, and detach that and the ovary, and draw both out of the opening, when the ovary will lie there without any effort to retain it, better than you can get it to lie in a median ventral wound, unless you make a large incision and far better than you can get it to lie in the vaginal incision without doing violence to its supports. I have pursued this plan of operating in over two hundred and fifty cases. Of this number, 223 have been painstakingly taken into review afterwards from one to two years after operation, and examined by myself or one of three other qualified men. There has been a single instance of return of the retroversion in this large number. There has been one death, due to slipping of the ligature from the pedicle in a case in which I removed a tube and ovary through the inguinal canal on one side. There has not been a single hernia, nor any sign of one. On the contrary, I have operated for inguinal hernia some twelve or more times as a concomitant feature; in fact, in several cases I have operated for inguinal hernia, then have drawn the lower edge of the wound down and operated for femoral hernia, all in addition to the work done upon the appendages and shortening of the round ligament, and by the one wound which is made in all cases by blunt dissection in every part except the skin and subcutaneous fat. I have now fourteen and perhaps fifteen women who have gone to term and have had natural labor after this my operation, with the exception of one who required version, in all of whom the uterus is in good normal position.

DR. J. CLARENCE WEBSTER.—About a year and a half ago I asked one of my students to review the literature dealing with the various operations that are under discussion. His results corroborated those that were detailed by Dr. Lynch.

In this discussion, there has been a tendency to consider the various operations both from the standpoint of correcting the uterine displacement and from that which concerns the relationship to pregnancy and labor. It seems to me, we are limited

entirely to the latter consideration. From Dr. Lynch's paper and from other reports, there can be no doubt that we must absolutely exclude from the list of operations in women who are likely to become pregnant, fixation of the uterus, whether carried out by the vaginal or the abdominal route. I suppose, we all agree in regard to that.

With reference to this other type of operation, namely, that which produces a new suspensory band (and we may take as the most widely known the Kelly operation), granted that we get in this operation nothing but the simple mesial band, what is the relationship to pregnancy and labor? I think the reports show clearly that the influence of pregnancy and labor is very unimportant. For instance, Noble points out, in his series of collected cases that the abortions (10 per cent.) could scarcely be considered as due to the operation, since in all cases of pregnancy we may look for a percentage of abortions of from six to eight or nine. But there is another important consideration. Anybody who knows the anatomy of a woman in the condition of pregnancy and labor, knows that the fundus of the uterus at full term does not lie near the symphysis pubis, or half an inch or three-quarters of an inch above, and it would not have required an anatomist to state that the suspension band must be elongated if the woman is going to full term. And that to me is the greatest objection to be raised to the Kelly operation, as regards the question of continued improvement after labor. One of two things must happen in every case of ventro-suspension, if a woman goes to full term. The band must be broken or stretched in every case. The operation must therefore be a failure in that the short suspending band has been destroyed, and if men claim that after pregnancy following ventro-suspension, the woman's uterus lies to the front in its normal position, then I say that the same result might have been obtained by having made use of a vaginal pessary to support the uterus. It seems to me that this position is quite logical. It is absurd to perform an operation whose good effects are certain to be destroyed after pregnancy and labor, and when we bear in mind that it may result in failure under other conditions, there is a strong reason for abandoning the procedure. I have almost entirely given up the method of ventro-suspension in cases in which pregnancy is likely to ensue, and I have come to the position taken by Dr. Goldspohn, that the best procedure is one which shortens the round ligaments. But how to deal with the round ligaments, is the question for decision.

Dr. Goldspohn is an enthusiast over his method. Alexander is an enthusiast over his original operation. Last year he published an interesting monograph, in which he has collected the literature dealing with his operation for the last twenty years. But Goldspohn and Alexander differ somewhat in their views. I grant that theoretically, the best procedure to be carried out for retroversion of the uterus is the Alexander operation, but I rarely perform that operation, because I rarely find a case in

which it seems to be indicated, viz., that in which the uterine displacement is entirely uncomplicated with other pelvic pathologic conditions. One may often believe that favorable conditions exist, when abdominal section reveals pathologic changes which were not diagnosed. It is impossible to be accurate in many cases with our present methods of examination. I have proved over and over again my inability to make out adhesions of the intestine to the appendages or to the uterus itself. I have proved my inability to diagnose a closed tube containing fluid when the tube was not distended, or marked degeneration in an ovary which was not much enlarged, and I know that other clinicians have had the same experience. We cannot diagnose adhesions in the pelvis at all accurately. We know how often we find conditions after opening the abdomen which were not recognized by bimanual examination, even carried out under anesthesia. My great objection to the use of the Alexander operation is that I cannot correct the pelvic pathology. What does Dr. Goldspohn do? He makes an opening on each side into the abdominal cavity. I hold that is a wrong procedure, because if we can get as good results through one mesial incision, there is no necessity of making two incisions in the abdominal wall. What are the weakest points in the abdominal wall? The region of the navel, and each inguinal area. Why should Dr. Goldspohn make an incision through these two weak areas? He says that no hernias have occurred after his method. Let us wait for the reports of a much larger number of his cases. In pregnancy, what happens to the navel? There is a transverse stretching of the linea alba one or more inches in every pregnancy, especially after the first one. I would like to know how pregnancy affects the cicatrized areas following the openings made in the inguinal regions. What was the reason for the widespread adoption of the Alexander operation in the years following its introduction? The high death rate of abdominal sections. At the time Alexander devised his operation, the mortality was from ten to twenty per cent. in ordinary abdominal work. Now expert clean operators have reduced the death rate in abdominal work to such a low percentage that I consider it just as safe to operate by the abdominal or vaginal opening as by the Alexander method, and therefore I am disposed to operate in the great majority of my cases by a mesial incision through the lower abdominal wall.

I pay a great deal of attention in my work to the plastic covering of raw surfaces. Will Dr. Goldspohn tell me how he is going to deal with a raw area produced by an adherent sigmoid flexure, or with other pelvic adhesions, without making an incision through the inguinal region larger than is necessary for dealing with the round ligaments? Will he tell me how he is going to deal, for instance, with a diseased vermiform appendix, especially one placed at a higher level than normal, without making a large right inguinal opening? When I learn to diagnose more accurately the conditions in the pelvis, then I am willing to adopt the

Alexander operation in those cases in which I find no complications; but at present I do not perform the Alexander operation in two cases out of a hundred in which I operate for retroversion.

I would like to refer to the operation of the President. He has modestly not referred to himself as the originator of an operation, but he also has introduced one which deals with the round ligaments, and I am sure we shall all be glad to hear from him before the discussion is closed.

My method, to which Dr. Martin has referred, namely, stitching the round ligaments to the back of the uterus, I have been using for some time, and am endeavoring to perfect it. I make no boast concerning it, but it seems to me to be more easily carried out, to leave the uterus in a more natural condition than the other procedures which have been used to shorten the round ligaments. I believe that it is very efficient. I think we all admit that sero-serous sutures in shortening the round ligament are inefficient, because the adhesions soon stretch. All I have attempted in the transplanting of the round ligaments is to double the round ligaments to the back of the uterus. I do not now put them down in the region of the utero-sacral, as that is too low. I had a couple of failures in my early cases, because the uterus fell back over the ligaments. I place them much higher up, and I carefully raw the portion of the wall of the uterus to which they are attached, in order to get firmer union.

Alexander points out in his monograph, that one reason for failure after his operation is that a pessary has not been used after the operation. I believe it is wise to use a vaginal pessary after any operation for the repair of a retrodeviation of the uterus for at least a couple of months.

DR. EMIL RIES.—I operate on very few cases of retroversion of the uterus. I am one of those heretics who believe that retroversion of the uterus is not a disease, and retroversion in itself is no reason why I should operate. If a woman comes to me with an uncompleted retroversion, so far as I can make out, with nothing else in her pelvis, and she complains of some pain, etc., I look for the cause elsewhere, not in the retroversion. That is why I have operated on five cases of retroversion in the course of the last year, when others have operated on dozens.

In complicated retroversions, I recognize that the retroversion is a symptom of disease, past or present, in the pelvis, which has left traces in the adnexa and on the outside of the uterus in the shape of adhesions. If I have to operate on these diseased adnexa and break up adhesions, I leave raw surfaces. If I do not force the uterus forward, there will be danger of raw surfaces, created by separating the adhesions, leading to new adhesions, and in order to prevent these I hold the uterus forward, so that I get the movable small intestine between the uterus and raw surface on the opposite side. This I do either by my own operation or by that of someone else. I do not feel obliged to do my own operation in every case.

We have heard from gentlemen to-night who have one or two operations for retroversion. I say I have a dozen, and I use the one that seems to be the most appropriate in each case, although it may not be mine. I have used Webster's; I have even done Goldspohn's. I have performed intra-abdominal shortening of the round ligaments; I have done ventro-fixation; I have done vaginal fixation; I have done shortening of the utero-sacral ligaments; I have used Bode's method. I do not do fixations on women who are likely to have children, but I do these operations on women who are not going to have any more children, either because their ovaries or tubes have been removed, or because they have passed the child-bearing age.

As far as the results of my operation go, I have had twenty-five cases. I have been doing this operation since 1899. Of this number, three women have had children; they went through normal labors. Two of them have been re-examined, and their uteri have been found in normal position. One patient had a baby two months ago and has not been re-examined as yet. One has had an abortion which she produced herself to get even with her husband, who made her angry at something. I have re-examined a number of the other twenty-one cases. I have had one recurrence that I know of, where a woman, after having been operated upon, contracted gonorrhea and new adhesions. Of course, that cannot be blamed on the shortening of the round ligaments, yet it should be considered when we discuss the results of such an operation. It will not do to say, one hundred cases operated on; eighty labors; seventy without disturbance, and ten with disturbance. The question is, what was the disturbance? If a woman has disturbance in labor after an operation on the uterus for retroversion, does that prove that the operation for retroversion was the cause of the disturbance in labor? This has to be determined in each individual case. It is very hard to form an opinion from general statistics without going into the details of every individual case, and unless we do that we are falsifying our statistics.

The operation which I have advised is not easy, and the operation has two objections. One objection is that by detaching the bladder from the uterus in the anterior vaginal operation we injure the bladder; I do not mean that we cut a hole in the bladder or make a fistula, but we rob the bladder of its natural nutrition to a certain extent. Dr. Kolischer's examinations of the bladder and those of Mirabeau and others after these vaginal operations have not been sufficiently emphasized. That is an important element in the subsequent result, and the bladder disturbances which often follow these vaginal operations we shall hear more from in the future, and they may be the cause of our withdrawing from vaginal operations to a greater extent than we intended to do. A second objection is given by the frequent complication of appendiceal disease. If we go in through an anterior incision in the vagina, we have little chance of attending to the

appendix; with the posterior colpotomy incision combined with an anterior incision, there may be a chance of attending to the appendix through the vagina, if we use electric illumination of the pelvic cavity, after von Ott, of St. Petersburg, a method with which I am experimenting at present.

DR. GUSTAV KOLISCHER.—I should like to make a few remarks with reference to drawing conclusions from statistics. Almost anything can be proven by statistics. It all depends upon the way we look at them. For instance, it will not do to say as one of the speakers did to-night, that, inasmuch as thousands of ventro-fixations or ventro-suspensions have been performed and only a relatively small number of obstetrical complications in such cases have been reported, that this operation is not dangerous as to future pregnancies. This kind of logic simply means the overlooking of the main feature of this statistic. It is not so much the relative percentage of complicated cases among so and so many ventro-fixations, but the salient point is that the rate of mortality, if ever complications arise in such cases, is simply tremendous. Any time, in a case of ventro-fixation, a complication arises which is the cause for any extensive obstetric interference, the death rate is great.

The defense by men who still perform ventro-fixation or ventro-suspension is quite characteristic. If you tell them that the uterus should not be pulled out of the pelvis and fastened to the abdominal wall in a non-physiological position, they will answer you that these adhesions will give way, and by being stretched will form a ligament which allows the uterus to drop back again. If you say that if such be the case, the operation was entirely unnecessary because of entirely missing its aim, they will talk in a mysterious way about emergencies which necessitate the ligament to hold the uterus temporarily forward; they will talk about changes in the intra-abdominal pressure or use some other high-sounding catch words, although if we want to be candid, we do not know anything about these above mentioned conditions. Even the intra-abdominal equilibrium is still a not very well understood proposition. But it is so easy to deluge you with empty terms if real conceptions are lacking. It is obvious that any existing artificial ligament has to give way during pregnancy and must become stretched according to the rising of the fundus. If you make the objection that such a long ligament floating around in the abdominal cavity is by no means an indifferent condition, you will be told that the ligaments produced by the different flawless methods of ventro-suspension do not become so greatly elongated by the growing of the pregnant uterus. Evidently, the consequence of the particular respect, a growing uterus is paying to the author of these methods.

What is the reason why such an operation as ventro-suspension is performed so often? Not only because the technique is an easy one; not only because its mortality is practically nil, but because it can be done without previously having made a refined diag-

nosis. A great many operators pride themselves on making a button-hole into the abdominal wall, and then they hang up the uterus some way or other, a proceeding that flies in the face of all the demands of modern surgery of the abdomen. Other men will tell you that they hang up the uterus to the abdominal wall through the vaginal route, and others will boast that they stitch the uterus to the abdominal wall without even opening the peritoneum.

There is another point which I should like to mention; so many methods have been devised, changed and modified for operating on a retro-displaced uterus, that the conclusion is a fair one that none of the methods is very reliable and satisfactory. The greatest satisfaction which I have derived from reading the literature on this subject and in listening to to-night's discussion, is that it became convincingly proven that there is a gynecology. That means that a man can not be a gynecologist without being an obstetrician at the same time. So far as the bladder disturbances are concerned, Dr. Ries is mistaken in his statements and in his quotation. Years ago, I called attention to the fact that stripping off of the bladder from its junction with the cervix under certain conditions will interfere with the nutrition of the bladder; if we miss the right cleavage, and do not work in the connective tissue between the uterus and bladder but get too near the bladder wall, we destroy important blood vessels and a desquamative catarrh of the bladder will appear. But this always heals up of its own accord provided no subsequent infection occurs. Serious disturbance may occur from suspending the uterus to the abdominal wall, in this way stretching the bladder. I quite often see patients operated upon in this way, who are tortured by permanent desire for urinating. I know of one case in which the patient actually did not have a single night's sleep for a year and a half after the operation, yet this case is quoted as one of the perfect successes of ventro-suspension performed by some method by which it is said it is impossible for any disturbance to occur. That is one other objection to ventro-suspension. I am quite sure that ventro-suspension and ventro-fixation will disappear, if every man who operates on women is aware of the fact that he should know something about the physiology and pathology of the pelvis, and more about the responsibility of a surgeon than a great many operators do at the present time.

DR. C. S. BACON.—I believe that this discussion, as well as the reading of the reports of the last few years, will lead us to avoid more and more operations for simple displacements of the uterus. We shall fear them more and more, and where there are no symptoms due to the displacement, we shall simply leave the uterus alone. It is possible to replace the uterus, where it is displaced, and hold it in place by a pessary, and I believe we shall go back to the use of the pessary, which will be efficient in a great number of cases, where the wearing of a pessary is no harm to the pregnancy or to the labor. In those cases where

there are conditions which demand the opening of the abdomen, it will be necessary very generally to hold the uterus in place; but anything like a suspension of the uterus in an unnatural position must be given up, and an operation on the round ligaments which demands too much interference with the uterus itself, which demands splitting of the uterus, will be looked at with considerable fear. I think the case that was reported in this city of thinning out of the uterus after a suspension should be studied with considerable care, and I have always had a little fear of Dr. Ries' operation on that account. Whether the attachment of the ligaments to the uterus by the Webster operation can have any detrimental results, of course remains to be proven.

There is one point that ought to be brought out which was not in the paper of Dr. Lynch, nor in the discussion, and that is a distinction between different kinds of fixation. A distinction has been made between fixation and suspension, but not between the different kinds of fixation. Where the serous surfaces alone are united, we have a kind of fixation, and that should be distinguished from the fixation where the deeper layers are united. These serous fixations are not suspensions. Those simple serous adhesions have not proven always satisfactory; they are not very efficient in some cases, and have the objections Dr. Martin and others have noticed. But where there is no infection, they are not altogether inefficient. I have myself sometimes made adhesion of the peritoneal surface to the bladder peritoneum, and have succeeded in cases where we simply want to keep the uterus in its normal relation to the bladder. Where there is not a great pull upon it, that is sufficient. If the uterus lies in its proper relation to the bladder, it cannot be displaced. Atmospheric influence is against it, and it is impossible to displace it in that case. If there is no abnormal influence, the serous attachment is sufficient, and we know that a serous membrane easily moves. We know the mobility of it, so it is possible that the obstetric complications due to the serous attachments are decidedly less than those where the fixation is more firm, and I think, in any collection of cases like these we ought to separate the two classes of cases. I do not speak in favor of this serous attachment except in the exceptional cases, but in such statistics that separation ought to be made.

DR. VICTOR J. BACCUS.—Three years ago, when I became assistant to Dr. Henrotin, there presented at the Polyclinic a patient on whom a ventro-fixation had been performed by Dr. Henrotin one year previously. The reason the woman presented herself was that she wanted to know if she was pregnant. The uterus lay on the anterior vaginal wall, and corresponded to a three months' pregnancy. Being anxious to learn if the complication might interfere with labor, I offered my services to her during delivery. There was no complication whatever during labor in this case, except when the os was fully dilated and the head presented itself to enter the inlet or the lower uterine segment, it

was slow in passing through the inlet proper. All that was necessary was to put a vulsellum on the anterior cervical wall between pains, wait for pains, and I then put slight traction and the head entered the pelvis normally. I kept track of the case, examined the woman from time to time, and the uterus was still in its position. Although the criticisms against abdominal fixations are well founded, I believe there are cases where one is obliged to resort to them.

Some time ago there presented a private patient of mine who had been operated upon previous by Dr. Ochsner. She had undergone some sort of operation for shortening of the round ligaments. On examination I found a median line scar possibly three and a half inches in length. The uterus was large, retroflexed and lying low in the pelvis, menstruation somewhat irregular. The symptoms she gave were pain in the back of a dragging character, and profuse menstruation. The patient's age was 22. The uterus was also movable. On examination I found that it was completely retroflexed and enlarged. No particular operation was advised to correct the position of the uterus. After opening the abdomen and separating a few omental adhesions through the abdominal incision, the uterus was found, tubes and ovaries normal, but the large body of the uterus, possibly once or twice its normal size due to passive hyperemia, was lying low in the hollow of the sacrum, with a few adhesions to the right tube. The round ligaments were elongated and very thin, and then arose the proposition as to what could be done to relieve the patient. I do not believe any operation for shortening the round ligaments would have held that uterus in position. She was a woman who had to earn her living. Hysterectomy was not entirely indicated. There remained one of three things to do, first, abdominal fixation, second, the removal of the uterus, third, shortening of the round ligaments, with the prospect of having to operate again. So I simply performed abdominal fixation, with the result that patient is relieved of her symptoms and able once more to earn her living.

DR. RUDOLPH W. HOLMES.—It is a self-evident fact that the uterus in its physiological state is a mobile organ; it seems to me that since this is an indisputable fact it is sophistry to argue that a ventral fixation is ever justifiable during the functional activity of the uterus; further this abnormal fixation at once makes the uterus an abdominal organ, in part at least, which is distinctly pathologic in the unimpregnated state. Further, as pregnancy develops, the anterior wall of the lower uterine segment cannot properly stretch to meet the needs of the growing ovum, so there must be an abnormal compensatory thinning of the posterior wall, which is distinctly dangerous in the subsequent labor. These same objections must obtain in the case of a ventral suspension, with perhaps, a less likelihood of producing grave complications in labor. With so many other safe, more rational procedures than ventro-fixation, or -suspension it would almost seem need-

less to discuss this phase of the question at the present time. To me it seems that the most rational operations are those which do not interfere with the uterine mobility, *i.e.*, those procedures which shorten the round ligaments, and from an obstetric standpoint the Alexander-Adams operation is the most logical as it removes the tendinous portions of the ligaments with the muscular parts unaffected.

There is one point that no one has mentioned, either in the papers or discussions, which I hold should be of considerable importance, and that is the Retentive Power of the Abdomen, or as others are pleased to call it, abdominal pressure. I believe it will be productive of results if this retentive power is thoroughly investigated—if convincing conclusions are reached I am sure less will be said about operations upon the uterine supports in womb displacements, and much more done in the way of correcting abdominal wall diastasis, or atony, and marked injuries to the pelvic floor. Uterine displacements following labor cannot alone be caused by ligamentous relaxations, but must to a considerable extent be due to the changes in the abdominal wall and pelvic floor, caused by pregnancy and labor. One needs but see one serious complication of labor produced by a ventral fixation, and read the statistics of the high frequency of these abnormalities in labor, to feel the danger of this operation, or its modifications.

DR. H. EDWARD SAUER.—When I returned from Europe some six or more years ago, and after seeing all the different operators work and all the different methods employed in operating for retroversio-flexion of the uterus, I asked myself the question whether or not I knew anything about a good way to operate for this disorder. Nearly every man I ran across had a different method, as has been well demonstrated by the discussion this evening. I tried to settle in my own mind upon some method which I could consider a really good one for relieving women of the suffering which they sometimes complain of due to this condition. I think I have tried practically every one of the methods given in the books, and I want to say this, that I have come back to the shortening of the round ligaments by the bi-inguinal method followed by Goldspohn, and have had the best results of any method that I have tried. I have now a series of sixty-five cases, with one pregnancy, following which there has been absolutely no complication. These women have been relieved of their suffering and symptoms, for which they came to me, and the operation has consequently satisfied me very much.

The particular point I rise to speak of is this: From Dr. Webster's remarks I fear you will wrongly conclude that too many raw stumps are left in the abdomen after this operation. I do not believe he spends any more time over the hygiene of the peritoneum in any operations than I do. In fact, I sometimes criticize myself for spending what seems almost too much time in trying to cover every raw spot I can find. From his remarks,

you are doubtless led to believe that we cannot attend to this peritoneal hygiene by the bi-inguinal route. I have removed myself one pus tube accidentally found, and two or three ovaries, and one hydrosalpinx and have been able to cover most raw areas beautifully. The tubes and ovaries can be easily delivered by this operation, and this method permits of quite thorough peritoneal hygiene.

With regard to Dr. Webster's remarks about not knowing what surfaces we have raw in the abdominal cavity, my own experience has been that if you get these intense raw surfaces in the abdomen even in a central laparotomy, you can hardly cover them by peritoneum, and you must devise a similar method to that spoken of by the President of lowering the omentum or small intestine down behind the raw surface on posterior wall of the uterus and letting it take care of the raw surfaces. I have in two laparotomies turned the sigmoid over in its mesentery, and covered large raw places from adhesions in that way and it has been fairly successful. It is true, we do not find cases often where that is necessary. I think shortening of the round ligaments is a fine operation, and in the language of Edebohls, "the more you *let* it become congenial to you, the more you like it."

DR. MARTIN.—Dr. Webster makes the point that the suspension ligament must of necessity give rise to disturbance at pregnancy or stretch to such a degree that it will be of no avail in keeping the uterus in position after the confinement.

My experience does not agree with this view in the cases of pregnancy examined following my operation. His statement is true in regard to fixation, but not true in regard to suspension which suspends to the parietal peritoneum and the peritoneum of the uterus.

With the elevation of the uterus in its development during the course of pregnancy, the peritoneum of the uterus and the lower abdomen becomes extremely loose and freely movable. This is abundantly proven every time we open the peritoneum in conditions complicating pregnancy. If the inch or inch and a half suspension ligament is only attached to the peritoneum of the parietes and the uterus, the fibrous ligament is not obliged to elongate because of the gradual yielding of the freely moving peritoneum. When involution occurs the peritoneum of the uterus and parietes will assume their normal condition of firmness and the unstretched ligament will act as before as the suspensory ligament of the uterus, preventing it from assuming a position of retroversion.

It must be remembered that the suspensory ligament is expected to attenuate and lengthen sufficiently to allow a large range of motion of the uterus. The four I have seen in secondary laparotomies after my own operation have varied from $\frac{3}{8}$ of an inch to one and one-half inches, in length. Like any round ligaments they are not expected to make a continuous pull on the uterus. They act only at times of emergency as guy ropes to prevent the uterus being thrown into backward dis-

placement to such an extent that the intra-abdominal pressure will act in front of the crest of the fundus and thus allow a relapse.

DR. NEWMAN.—It was announced at a former meeting of the Society that we would dispose of this subject for all time in regard to the treatment of retrodisplacements of the uterus. I have not been convinced from my own standpoint that the matter has been definitely settled, but I am glad that we have made some steps in the right direction, namely, that we have practically excluded fixation operations in childbearing women, and by fixation operations I think we can include suspensory operations. When we take tissue other than the round ligaments or other than tissue which involutes following pregnancy, we cannot say definitely what disposition will be made of that tissue. Certainly the round ligaments are structures that are intended for a definite purpose. As has been said, they simply serve as stays to hold the uterus forward, not acting at all times, not acting to suspend the uterus, but simply as guy ropes, so to speak, to keep the uterus from retroverting or tipping backward. The intra-abdominal pressure does the rest, and as long as the uterus is held sufficiently forward, and the intra-abdominal pressure brought upon the posterior wall, we have no fear of displacement backward, and so the integrity of the round ligaments and utero-sacral ligaments is essential to the stability of this organ.

Some of the better points in regard to these various operations on the ligaments have been outlined, I will take the time only to recall a method which I gave to this Society sixteen years ago and afterward to the American Gynecological Society in whose transactions a full description may be found. It is an operation which has stood the test of time most admirably and which has been done since then by other operators, with great satisfaction. It has even had the honor of being more than once appropriated by some strenuous worker in the same line. It was in pursuance of a suggestion of Dr. Frank of this city that I first adopted the "new or direct" method as I then called it. Briefly it is this, I open the internal ring or the canal of Nuck so as to get at and draw upon the intra-abdominal instead of inguinal portion of the ligament, thereby obviating an incision at the external ring where it is frayed out in its distribution to its different attachments and cannot be relied on to support the necessary traction used in bringing the uterus forward. Besides the many advantages which pertain to the operation at the internal ring and which I have enumerated in several papers, I think it has this to commend it particularly, that it is a middle course between the very radical work outlined by Dr. Goldspohn and the original Alexander-Adams method with its exacting limitations. The excision thus situated at the internal ring can be readily extended for the purpose of exposing the round ligament in its entirety, breaking up adhesions, palpating ovaries, tubes, etc., or even doing resections after the method of Dr.

Goldspohn. In this operation the closing of the wound amounts to a Bassini operation and is a barrier against hernia. Of course the object of all round ligament operations should be to lift the uterus into a somewhat exaggerated anteverted position and to hold it there for a time by means of the taut ligament, thereby encouraging drainage, improved circulation, bringing about relief of the parts from abnormal strain and pressure. This taut condition does not remain permanent but is modified by intra-abdominal pressure and the functioning of neighboring organs. The results of the operation have been uniformly satisfactory, and where accessory operations are done as indicated by the pathology which generally accompanies these chronic cases, the patient realizes a physiological as well as an anatomical cure.

DR. GOLDSPOHN.—I am pleased to hear Dr. Webster say that the Alexander operation is "the best operation for the woman." That is worth much. I am a little surprised, however, to hear his protestations about his inability to make the required diagnoses. On that score he aims to put me in a rather erroneous light by implying that I do everything or all kinds of cases through the inguinal canal; and he says that I cut into the abdomen twice. I do not cut into the abdomen even once in this operation. I cut only the skin and subcutaneous tissue; I sever the apponeurosis of the external oblique by splitting it open by cleavage. Nothing is cut with knife or scissors beyond the skin and subcutaneous fat or areolar tissue. The rest of the entrance is made in every single case bluntly. Surgeons who have operated on hernia with the best statistics have repeatedly remarked, in looking on, at the operation, that the abdominal wall is as strong as before or stronger there now; a modified Bassini technique being always observed in closing the wound.

In regard to possible hernia, I have taken 223 cases into actual review covering a period of one or two years after operation, 14 of them after a subsequent labor, and I wish to repeat that those men who do not believe what I have said about hernia can examine the cases and see whether my investigations are true or not.

As to the limitation in every article and declaration I have made about the bi-inguinal operation, I have limited the operation to complicated but *aseptic* retroversions. We know that in the majority of all cases of infection in the female genital tract, big and little, the infection dies out. We have adhesions, distortions and degenerate conditions left, but no active germ life; and this condition of adhesions, with cystic ovaries and thickened tubes we can diagnose. A properly disciplined examiner can say positively that there is no remaining active infection present. If Dr. Webster wants proof of that, I will do it for him, before and during operation, on as many cases as he wishes to see.

In regard to the number or variety of operations that every operator should employ to fit all cases best I will say that I have spoken so earnestly with references to the bi-inguinal method of shortening the round ligaments that possibly some of you are

led to believe that that is all I do for retroversion; but that is far from true. I have done very many more cases by suspension of the uterus by the round ligaments after Gilliam-Ferguson, in the last three years than I have treated by my own operation, for the reason that the majority of the women of this class who came to me had active infection, probably remaining in their adnexa, or had a suspicious appendix, and therefore required regular abdominal section. These things can be diagnosed. That appendicitis cannot be diagnosed beforehand in the ordinary case (excluding corpulent persons), I do not believe. An appendicitis even when subdued produces sufficient local symptoms to be at least strongly suspected, and if that is so I do not do bi-inguinal operating. I do as great a variety of operations as anyone. In the first place the pessary with me enables many women, both to keep well and to escape the knife. I have done the Webster-Baldy operation both through the abdomen and by the vaginal route. I have done every known form of operation for shortening the round ligaments within the abdomen, and the Ferguson-Gilliam suggestion of suspending the uterus by the round ligaments is the next best thing to the Alexander, and should be chosen when the abdomen needs to be opened for other reasons.

DR. WEBSTER.—I fear that Dr. Goldspohn has misunderstood me. I had no reason to cast any doubt on his statistics. I did not refer to hernia occurring as the result of his operation alone, but as the result of pregnancy taking place afterward.

There is a discrepancy between the remarks of Dr. Goldspohn and Dr. Sauer, as the latter gentleman seems to be capable of dealing with everything satisfactorily through the inguinal opening. I do not deny that it is possible to deal with these complications through two incisions, but I say it is unnecessary to make two incisions if one can work through one.

It is interesting to refer to the point Dr. Martin raised. He referred to a comparison between the changes in the round ligaments in and after pregnancy, and in the suspension band. What happens to the musculature of the uterus and round ligaments? In pregnancy there is hypertrophy and hyperplasia in both, the round ligaments being greatly elongated. After labor retraction occurs in both, and gradual reduction in size, the latter change being mainly due to a process of peptonization and absorption. No corresponding diminution can take place in the elongated suspension band, which is almost entirely composed of connective tissue. As the fundus of the full time pregnant uterus lies 9 to 11 inches above the symphysis, it is evident that the band must undergo enormous elongation, if it is not broken. After delivery it can be of no value as a uterine support.

I have proved that retraction does not occur in the suspension band even where pregnancy has not caused elongation. Some months after ventro-suspension was performed by myself in two cases, the uterus was again retroverted. I replaced the organ and introduced a vaginal pessary for several months, hoping that

shortening of the stretched band might occur. After removing the pessary the displacement returned. I then performed abdominal section in order to shorten the round ligaments. In one case the band was about four inches and in the other five inches in length. They are now in my museum in Rush Medical College. There had been no retraction in the bands.

RUDOLPH W. HOLMES, M.D.,
Editor of the Society.

TRANSACTIONS OF THE SECTION ON
GYNECOLOGY OF THE COLLEGE OF
PHYSICIANS AND SURGEONS
OF PHILADELPHIA.

Meeting of February 18, 1904.

DR. JOSEPH MCFARLAND read a paper on

THE BODY DEFENCES AND SYNCYTIOMA MALIGNUM.¹

DR. GEORGE ERETY SHOEMAKER reported the following case, in which the probable diagnosis of

DECIDUOMA MALIGNUM.

was made, the only one appearing to be an example of this rare disease which has come under his observation. The curetting was done at the Presbyterian Hospital, because of very severe hemorrhage following a miscarriage three months before. The uterine cavity was large, and contained several drachms of tissue in firm masses, feeling brittle as they were broken from the uterine wall by curette forceps. To the naked eye these masses represented degenerating placental tissue firmly organized. There were also present in the cavity several polypoid, smooth, soft masses, each the size of a small bean, which were quite different in consistence and character from the brittle tissue before referred to. It was from the microscopical examination of this brittle tissue that the diagnosis of deciduoma malignum was made. The laboratory report was as follows: "The specimen consists of placental tissue, but looks very suspicious. Scattered through the fibrous tissue are nests of very large epithelial cells with a round vesicular nucleus. These are evidently syncytial cells, rendering the diagnosis of deciduoma malignum very probable." The microscopical specimen was submitted to two other microscopists, one of whom confirmed and the other doubted the diagnosis. Notwithstanding the suspicious clinical features of the case, it was decided to observe further developments before doing hysterectomy, and, in consequence, the patient was lost sight of.

¹See original article, page 462.

She was white; 37 years old; married 21 years, with five living children, and one which had died soon after birth at the seventh month. Two miscarriages, the last one three months before coming under observation. At this miscarriage, from which her hemorrhage had dated, the fetus was seen by her physician. It was not degenerated, and apparently about two months in development. No placenta came with it, and there was no history of a mole. She passed the fetus while at work, in a standing position, after bleeding freely for three or more weeks. Three weeks later her physician used a dull wire curette, but secured only a few shreds. Hemorrhage continued profuse at short intervals until she entered the hospital three months afterwards. Great gushes of blood and clots the size of a fist were preceded by pain. She had lost much flesh, and was in poor condition from hemorrhage. The uterus was somewhat enlarged from before backward. There was no history of pelvic peritonitis. Her periods had been too profuse for two years, since the birth of the last child, and for several months prior to miscarriage there had been soreness in the left ovarian region, with bearing down. Probably these symptoms were due to lacerations and descent. The laboratory diagnosis was received two weeks after my operation for curettement and repair of lacerations. The blood count was now made for the first time. It was as follows: Hemoglobin, 40 per cent. Red cells, 2,888,000; white, 9,500. The differential count was as follows: Polymorphonuclear cells, 6.7 per cent.; small mononuclear cells, 20 per cent.; large mononuclear cells, 8.8 per cent.; transitional cells, 3.4 per cent.; eosinophiles, 0.2 per cent.

There was at the time no clinical evidence of metastasis. This case cannot be regarded as complete, because the after history of the patient is not known. She recovered nicely from her curettement, but after leaving the hospital was not again seen and could not be traced, probably failing to have sufficient respect for the difficulties and uncertainties of microscopical pathology. While the clinical appearances, history of loss of flesh and hemorrhage, with the opinion of two careful microscopists, would have justified hysterectomy, it was considered advisable to wait for further evidence, in the presence of some adverse pathological opinion.

DR. W. REYNOLDS WILSON.—I think it very important that the term for the description of this growth should be properly used. It seems to me, in the light of present opinion, that the term "deciduoma malignum" ought properly to go out of use. The interest of the profession has been so frequently directed toward this subject that we are a little acutely on the alert to find an instance of syncytioma, and I believe we shall all have to come to the point of acknowledging that it is an extremely rare condition.

As to Dr. McFarland's paper, I think it is extremely interesting. I have read recently of the observations of Dr. Stahl, of Chicago, who treats of the subject rather in the same way, except that he emphasizes the cell activity of the syncytium rather than dwelling, as Dr. McFarland has, upon the chemico-physiological aspect.

His theory is that the lower layer of syncytial cells has an almost phagocytic power of penetration; that they have been observed by him migrating from their proper stroma into the maternal tissues, and also in reverse direction into the villus itself after apparently being taken up with the blood current of the villus, looking almost as if the cells were being incorporated as part of the newly formed blood in the embryo.

There is another important consideration, I believe, in the fact that syncytioma is apt to be more frequently observed in pluriparous women. As the syncytioma has its origin in the mesoblastic elements of the embryo, there must be some element in the maternal tissues that permits of the invasion. Perhaps this is because of the imperfect cell resistance, or it may be due to the unusual venous supply in the parous uterus which permits of the larger expanse of blood current which can be invaded by the loose or migratory cells.

On the clinical side, in the question of diagnosis, it seems to me that the matter of metastasis ought to be carefully considered, and in many of the cases that I have seen described the early metastasis has been a much more prominent symptom than the hemorrhagic condition. It may be that in these cases the hemorrhagic condition had perhaps not been fully considered, owing to the fact that hemorrhage under these circumstances is apt to occur from passive congestion without there being any real pathological tissue change.

Another interesting point is that the syncytium, as embryonal tissue, apparently loses its growth as the placenta is formed. It is, therefore apparent that the malignant change belongs to the latter period of development in the embryo, as in the case of other malformations, such as instances of imperfect fusion causing such lesions as meningocele, spina bifida, harelip. It is a question of inherent development in the embryo. In this formation, the syncytium, being entirely embryonal tissue, takes on its growth early during the life of the embryo, so that the tendency toward excessive observant growth, as emphasized by Dr. McFarland, comes with the fertilization of the ovum.

DR. R. C. NORRIS.—I speak with hesitancy on this subject, because I have never met with a case offering an opportunity of studying this curious disease from a clinical view point; and, of course, not being an expert with the microscope I have no personal opinions in that line to express. I have, however, followed the subject with a great deal of interest since Snger first described his case, which, I believe, was not what we are discussing to-night. His case of supposed malignant deciduoma was really a sarcoma and the subsequent studies of the syncytium have brought out phases of what appears to be a distinct disease.

It is interesting to note, in following the literature, that there have been some ten or twelve theories already advanced as to its origin, but the study of this growth has by no means cleared up the subject at the present time. I was struck particularly with

what Dr. McFarland said of the finding of these syncytial masses in the musculature and bloodvessels of the uterus when there had been no clinical sign of malignant disease. Schmorl also has found these in the liver in cases dead of eclampsia, and they have been found in the kidneys, lungs and brain independent of apparent uterine disease, showing that the distribution of syncytial masses either in the womb or in other areas of the body cannot be distinctive of malignant disease of the womb as we heretofore have known it. That brings us to the question of the true character of this growth; and we know that there has been active discussion to determine whether this was a new form of malignant growth, a special form of sarcoma or epithelioma, or whether it was that the syncytial masses are associated with ordinary malignant disease antedating or coincident with pregnancy. From what I have read in literature I am not fully convinced that all the cases of so-called syncytioma have really been a new and distinct species of cancer. Some of the cases reported by microscopists are apparently malignant disease, carcinoma or sarcoma, antedating or coincident with pregnancy and associated with syncytial masses. There is, however, evidence to make one believe that very rarely *there may be encountered a form of epithelial growth which becomes malignant for all practical purposes, sometimes presenting the clinical signs of malignant disease of the womb, at other times not associated with such symptoms, but equally destructive by metastases.* If the elements of these syncytial masses are distinctively a new species of epithelioma, the microscope must decide it, and I appeal to Dr. McFarland, whose experience has been so much greater than my own, to know if there has been a verdict of the microscopists of the world, which makes it absolutely and definitely certain that syncytioma malignum is a distinctive form of malignant epithelial growth. I would like to ask also whether microscopists and embryologists are assured finally, from their investigations, that the syncytial layer is of maternal or fetal origin. These, I believe, are the questions in dispute and they show us how thoroughly confounded and expanded the question has become since the first investigation by Sanger. There is much mystery in it. It is of exceeding interest to obstetricians and gynecologists, and when microscopists of national and world-wide reputation disagree, of course an individual like myself can form no definite conclusion.

DR. WILLIAM M. L. COPLIN.—In a case reported a number of years ago by Drs. Davis and Harris, I had an opportunity to study the specimens, both microscopically and macroscopically. In Dr. McFarland's presentation no reference was made to cases occurring in man; the assumption that tissue of the type represented by the syncytioma can occur in other than those of the developing embryo, would seem to indicate that tissues of this kind may arise independently of syncytial structures or there is suggested the possibility of the teratomatous character of some of these growths. I think from the relatively large number of syncytiomas reported

some of them are not the type of tumor that I had the opportunity of studying, which clearly was a syncytioma.

The idea of the metastasis being the result of the lessened resistance of the maternal tissues appeals to me strongly. There can be no doubt of organ emboli and their colonization in other tissues; we are familiar with the organ emboli of the thyroid. It has been suggested that some of the types of adrenal metastasis may follow somewhat the same lines.

Dr. McFarland's suggestion also seems to be exceedingly interesting, as giving us a basis explaining another conspicuous feature of these tumors. I may be wrong, but if my memory serve me rightly metastases from this type of growth are prone to involve certain organs, notably the kidney and brain. I do not remember from the investigations, which of the organs suffers most frequently. It has been shown by a series of experiments made a number of years ago that an animal can be inoculated with streptococcus and die; that inoculations can be made from the kidney of that animal and a streptococcic growth obtained and another animal inoculated and then second cultures made from the kidney. Eventually an organism is obtained that exerts more influence upon the kidney than upon any other organ. Professor Welch, in his lecture on immunity, suggests that, in addition to the tissues building up a defense, the germ constructs a line of attack. If that be true, then the colonization of embolic materials coming from a tumor of this kind in certain organs would indicate that those organs possessed less of this cellular protective power—the lysins or other antibody; that these are less active in the tissues of certain organs than in other organs. The metastases of syncytioma must be freely distributed through the body. Emboli do not, in the ordinary sense, pick out given organs; that these growths develop in the organs named indicates lessened resistance on the part of certain tissues, or what might be called increased susceptibility. If this increased susceptibility depends upon the chemical character of the tissues, then we have naturally what seems an application of Dr. McFarland's suggestion as to the selectivity for certain tissues.

DR. R. P. McREYNOLDS.—My idea in regard to the syncytium is different from that given us by Dr. Wilson. I think it does not disappear, but remains during the entire course of pregnancy. The "cells of Langhan" disappear, but not the syncytium. I have been on the lookout for deciduoma malignum for some time, but have never found a typical case. I curetted a woman last August who had a miscarriage, followed by a severe uterine hemorrhage. I removed from the uterus a large piece of what seemed to be partially organized placental tissue. The pathologist reported from microscopical examination that it was a cancer. I have seen the woman in the last few weeks and find that she is apparently all right; her uterus seems to be normal and her general health is good. I have examined the specimen, as prepared by the pathologist, and it looks to me like an ordinary carcinoma. I

could find no giant cells in the specimen. As I understand it the presence of these giant cells are characteristic of deciduoma malignum and distinguish it from the ordinary carcinoma. I would like to ask Dr. McFarland what are the distinguishing characteristics of this growth when examined under the microscope. If I understand it correctly it occupies a position mid-way between carcinoma and sarcoma. I think if we are to cure the disease it is necessary that a diagnosis be made before metastasis has taken place, otherwise even a radical operation like hysterectomy will not cure it. I find that R. Williams reports hysterectomies performed in fourteen cases of deciduoma malignum, two died soon after the operation, five died inside of twelve months, seven were still living then between ten and twelve months after the operation. It is a very fatal disease, and if we are to cure the cases it is absolutely necessary that we make an early diagnosis and do a hysterectomy before metastasis commences.

DR. H. D. BEYEA.—I have never had under my observation a case of syncytioma malignum, nor have I ever had the opportunity to make a careful histological study of such a case, but as I understand the clinical history, neither the case referred to by Dr. Shoemaker or that by Dr. McReynolds could have been an instance of this disease. The new growth develops very rapidly, almost before it can be recognized, quickly gives metastasis and causes death, whereas in these two cases there was apparently a slow development, and we can almost assume that both recovered. There is no cause to believe, from the study of the cases reported, that either were instances of the syncytial malignant new growth. It is to be remembered that the diagnosis of the growth is very difficult, that the histological structure of retained placental tissue and the deciduoma strongly resembles that of the syncytial tumor. A careful histological study of all of the cases operated upon for any cause at the Gyncecan Hospital and University Hospital during the last ten years does not show a single instance where this disease could have been suspected. My experience teaches that syncytioma malignum is an extremely rare disease, also, the literature would certainly point this out.

DR. MCFARLAND.—I will say a few words in description of the trophoblast and the syncytium, but wish to say that I am not an embryologist at all and do not have charge of an embryological department. A little diagram will show better that which I wish to describe. As the ovum surrounded by its trophoblast comes to rest in the deeper layer of the endometrium or deciduoma vera, it sends out prolongations which become what are known as chorionic-villi. These are covered with continuous layers of nucleated material which we call the syncytium. The extensions of the trophoblast continue to have the same action by which they made their way into the decidua and open up the sinuses by which the fetal blood is to receive its oxygen. The placental sinuses are thus developed. There then comes a time when the embryonal structures are separated from the material structure by a layer

of these cells. Later on, if you will look at the placental structures you will find the syncytial remnants in what look like giant cells. Nearly all the giant cells that you find in placenta are remnants of the syncytium. The pathologist has no easy task before him when he is asked to say whether a fragment removed by the curette is from a case of deciduoma malignum or not. He gets that from which it is impossible to draw any conclusions. Unless the proper material for examination is received he can do nothing with it. In evidence of this, let me quote an experience of my own. A friend brought to the laboratory some uterine curettings and suggested that the patient, who had a miscarriage and was suffering from an enlarged uterus, had syncytioma. I examined the fragments and found that they were all of placental tissue. One has no right to express any opinion from an examination of fragments of the placenta. Very much against the opinion of my friend I expressed my belief that, notwithstanding there seemed to be proliferative changes in the placental fragments, we had no right to conclude that the patient was suffering from syncytioma. I do not know what report was made to the surgeon, but whatever report was made, the gynecologist was under the impression that the patient must be given the benefit of the doubt. The pathologist had concluded that the tissues examined were suspicious, therefore the uterus must be removed. The uterus was later brought to me. I examined it and on the posterior wall there was a peculiar dark-colored hemorrhagic soft mass which I conceived to be the site of placental attachment. On the anterior wall near the fundus of the uterus there were two rounded grayish masses. I thought they might be independent adeno-carcinoma that antedated the pregnancy. As a matter of fact, that patient had no tumor of the uterus. A most careful microscopic examination shows nothing the matter with the uterus. The dark-colored mass that I had thought to be the placental site turned out to be such. The masses I thought might be adeno-carcinoma turned out to be irregularities, possibly caused by the curette, that had become smoothed off by necrotic changes.

When Dr. Norris asks me to give some positive criterion for the recognition of syncytioma he asks a difficult thing. The only criterion is the discovery of syncytial tissue. If you find a mass hemorrhagic in character in which syncytial tissues are present, then call it syncytioma; otherwise, no. It has been my fortune to see two cases of this peculiar tumor. The first one I saw before the tumor was recognized in this country at all. It must have been eleven or twelve years ago. The case was one which Dr. Noble has since reported before the Society, and was operated on in the Kensington Hospital. There was a dark-colored mass projecting from the posterior wall, which mass presented the typical microscopic features with which I suppose every one is familiar. Its typical characteristic is somewhat that of nucleated protoplasm. Some of its cells are very large and some are very small. I do not see how it is possible to mistake a syncytioma for

any ordinary form of tumor. All carcinomata of the body of the uterus are of the cylindrical epithelial type and are entirely different.

Another question asked by Dr. Norris was whether this tumor is a sarcoma or a carcinoma. It is not either. There are three classes of uterine tumors—sarcoma, carcinoma and syncytioma. The syncytium is undifferentiated embryological tissue and the tumors derived from it are neither epithelial nor sarcomatous.

TRANSACTIONS OF THE NEW YORK OBSTETRICAL SOCIETY.

Stated Meeting, December 8, 1903.

The President, DR. GEORGE W. JARMAN, in the chair.

DR. J. E. JANVRIN presented a specimen of

MALIGNANT DISEASE OF KIDNEY IN AN AGED WOMAN

which had just been removed by operation from a lady of seventy-one, whom he had known professionally for over twenty-five years. She was married, but had had only one child, and that one about thirty-five years ago. About fifteen years ago she began to have a slightly enlarged spleen, associated with a moderate degree of anemia. It was thought to be dependent upon Roman fever, from which she had previously suffered. Four years ago she had an attack of biliary colic, and, having passed a number of calculi, recovered nicely. At that time, it was noticed that the left kidney was somewhat enlarged, but was not painful. When examined last Spring, this kidney was about fifty per cent. above its normal size. Last July, while away from the city, she was seized with pain in this region. When seen by Dr. Janvrin in October the kidney was about twice the normal size, and she suffered from attacks of lancinating pain, not like ordinary kidney colic. There was, in addition, much flatulent dyspepsia, and she was emaciating rapidly. An effort had been made to improve her general condition since that time preparatory to the operation, as the diagnosis was malignant disease of the kidney. Drs. Janeway and Polk saw the case in consultation last week, and concurred in this diagnosis and in the proposed treatment. The operation was done this afternoon. In spite of the large size of the mass it was enucleated through the loin, without going into the peritoneal cavity. During the manipulation, the kidney itself broke down, and a considerable quantity of necrotic, carcinomatous tissue was discharged. Ligatures were applied to the stump, two or three points of venous hemorrhage were tied and the wound was closed. At the present moment she appeared to be doing well. The case was of interest because of the long con-

tinuance of the growth. He believed the malignant degeneration had occurred within the last six months, although he had noted a slight enlargement of this kidney six or eight years ago.

DR. W. S. STONE said that as the specimen had been referred to him, as pathologist, he would say that, from a hasty examination of the specimen at this time, it was probably carcinoma. He was inclined to think, however, that it had existed for a much longer time than suggested by Dr. Jarvrin, this being a slow-growing tumor with considerable fibrous tissue. In the past few months a change had evidently taken place in the tumor, the latter undergoing necrotic changes, and it was probable that the symptoms observed during this time were due to these changes rather than to the change from a benign to a malignant growth.

DR. BACHE EMMET suggested that it was sometimes a good plan to make use of the anterior incision, push the peritoneum away and secure ample space below the ribs, thus enabling one to dissect and remove the ureter. Here, the atmospheric pressure would assist in securing the room needed. This point had been well brought out by Dr. Reynolds, of Boston, in describing several similar operations. In this way one could work rapidly and efficiently and have full control of any bleeding.

DR. JANVRIN replied that he had tried the method recommended by Dr. Bache Emmet in other cases of large tumor, but had not succeeded very well because, in spite of using great care, he had generally penetrated the peritoneum.

DR. J. C. EDGAR reported a

CASE OF NON-FEBRILE POST-PARTUM ERYTHEMA.

M. L., 20 years; single, primigravida, factory girl, was admitted to the Emergency Hospital August 26, 1903. The woman worked about the Hospital and enjoyed good health from August to October. Upon October 21, after a labor lasting 24 hours, the patient was delivered of a female child weighing five pounds, 15 ounces. The presentation was vertex, and the position L. O. A. Chloroform was used for the head delivery. The placenta and membranes were expressed 20 minutes after the expulsion of the child. No excessive bleeding occurred. Two sutures were taken in the perineum; a vaginal douche of 1-10,000 sublimate solution was given, and a drachm of ergot administered. No iodoform or other chemicals were used about the case. Upon October 22, 24 hours after delivery a slightly elevated, bright red, erythematous, macular rash appeared over the buttocks, and on the skin surface covered by the binder, which rapidly became confluent, burning and slightly itching. The throat showed no symptoms; there was no rise of temperature, and the lochial discharge remained abundant and without odor. Upon October 23, the rash extended to the chest and extremities with a few spots upon the face and presented the clinical picture of measles. No other symptoms were present. At this time two diagnosticians of the Health Department, Dr. E. A. Bryant and Dr. Somerset, saw the case and pronounced it one

of post-partum erythema. Upon October 25, urinary analysis showed urine clear, amber color, sp. gr. 1.018, no albumin, no sugar, marked indican reaction and a few hyaline casts. Upon October 26, rash was much darkened and rapidly disappearing. Patient in excellent spirits and condition without other symptoms. The bowels were opened upon the third day post-partum with a saline, and with the exception of this and daily hot saline vaginal injections, no other treatment was given. Upon October 31, the usual post-partum examination of the Hospital was made, and the rash at this time had entirely disappeared; the perineum was well united; only slight vaginal discharge was present; the cervix was firm with moderate laceration; the uterus was drawn to the right, forward and firmly contracted, well involuted and not sensitive to pressure.

The case was discharged from the Hospital November 3, 1903, fifteen days after delivery.

DR. W. S. STONE had recently had a case, in a young primipara, who, two months before the expected confinement, after what was said to be an indiscretion in eating, developed a rash all over the body. This rash was of an erythematous nature. There was only a slight rise of temperature, but some nausea and vomiting. The administration of salines relieved the nausea and vomiting and controlled the fever, but the rash continued until she was delivered prematurely about two weeks ago. The rash began to disappear immediately after delivery. He had explained this rash on the supposition that it was a manifestation of toxemia, perhaps of intestinal origin. Dr. Edgar's case might very probably be of the same sort, even though it developed after parturition. These cases seemed to him of considerable importance from this point of view.

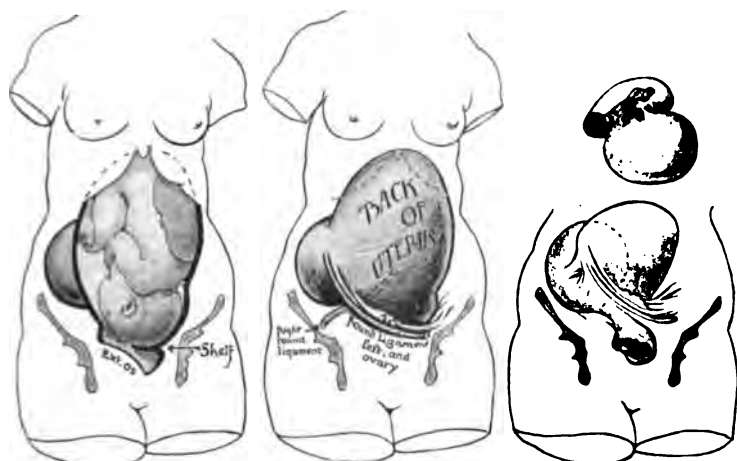
DR. JOSEPH A. BRETTAUER said he did not know how frequently these cases occurred in obstetric practice, but they were comparatively common in operative cases. He was sure that the manifestation was some form of toxemia, but as to the exact nature he was yet in doubt. In a case seen recently at the suggestion of a dermatologist, he had given two injections of pilocarpin, and it had acted admirably, the itching being very promptly controlled.

DR. R. L. DICKINSON reported a case of

EXTREME ROTATION OF FULL-TERM UTERUS BY STRANGULATED
FIBROID; NECESSITATING FORCED DELIVERY AND
HYSTERECTOMY.

Mrs. X, aged 37, patient of Dr. Bierbauer, in good general health, had one child twelve years ago. The labor at full time lasted two hours, and was terminated by forceps. The last period, March 12th, was scanty. July 3d life was felt. In July a gynecologist twice examined her because of slight hemorrhage. At the second examination the high position of the child (which was of a size corresponding to the fifth month) up under the ribs on the left side, with what seemed to be the fundus on the right

side, low down in the abdomen, caused him to make a diagnosis of abdominal pregnancy, and send her home to Brooklyn. In consultation, November 7, 1903, the child was indeed found remarkably high in the abdomen, its head lying against the left half of the diaphragm, the heart far above the navel, the breech two inches above the symphysis, the cervix above the pelvic brim. The pelvic diameters were ample. Great distention of the intestines prevented any conclusion concerning a condition on the right side which I marked "obscure" on my diagram. Dr. Bierbauer effected an external version later. November 27th the child lay with its head far above the brim, R. O. P. Between the uterus and the mass on the right was a deep sulcus. This round elastic tumor measured 12 cm. in diameter, and was said to have grown



Half-turn in full term uterus due to large fibroid. The round ligaments are nearly reversed in position.

The section shows shelf resembling one sided retraction ring, produced by the twist and the broad ligament. The cervix is askew.

rapidly within a few days. Beneath it, between it and the uterus, the round ligament ran up. This was naturally taken for the *right* round ligament and indicated the geographical location of the tumor as at the right cornu, with a broad attachment to the side of the uterus at the back of the broad ligament. Its feel was that of a cyst. Above and behind the tumor a band to the uterus was found. It was decided that, as the patient was close to term, and the tumor well out of the pelvis, delivery by the natural passages would be best attempted, with laparotomy as many days after labor as it could be put off, but that we would stand ready to open the abdomen at the first warning of trouble.

At the Long Island College Hospital the second Voorhees bag

was passed at 10 A.M., November 28th, and pulled on by the nurse at ten-minute intervals for six hours, when it came away. Next morning, the 29th, after good sleep, the largest bag was passed. In the evening it came away. The cervix was soft, moderately thinned and entirely askew, its right side being pulled far above the inlet, its left side at the inlet. Nearly two inches above the inlet a shelf roofed the entire left half of the pelvis. Chloral and codeia gave her three hours sleep. Then, refreshed, she kneeled awhile, but pains were negative. The head would not engage, though well flexed; the fetal heart beat 140 to 150, as it had for weeks. The breech lay behind the xiphoid, the uterine axis central. The tumor was becoming larger and very tender, filling the false pelvis and going up to the ribs. Therefore, in the evening, a rapid extraction was done by version. The strange phenomenon, the shelf, the one-sided and extreme development of what seemed retraction ring, so obstructed the exit of the head that the child was lost, living only an hour. On this ledge the chin caught solidly, and down upon the head the uterus settled viciously. The sequel explains why.

For three days smooth progress was made. Then pulse and temperature rose, the tumor grew to 20 cm. (eight inches) or more in diameter, and a laparotomy explained the riddle.

In opening the abdomen a flat surface of uterus presented in the incision. The tumor was seen at once to be a soft fibroid, apparently with a broad attachment on the back of the uterus. The round ligament ran up from the pubes on the right side, but the ovary was to the left of it. When uterus and tumor were delivered it was apparent for the first time that the growth was sub-peritoneal, squarely seated on the whole width of the lower part of the *front* surface of the body of the uterus, and that a half turn of the uterus had been caused by the mass, the dorsum facing forward. The drag on the peritoneum that attached tumor to womb had stretched it extensively, allowing free play, and producing a deep sulcus, but subjecting the return circulation to that obstruction which resulted in edema and great venous engorgement. In view of the wide attachments, vascularity, and the threatening temperature, hysterectomy was done instead of myomectomy. The stretched and flattened ovaries were left and the peritoneum carefully closed over the stump of the cervix. The recovery was afebrile and smooth.

A half turn in the long axis of this uterus brought the left broad ligament taut across the lower uterine segment, producing a great unyielding valve. Had a correct diagnosis been possible, untwisting the uterus would have straightened the canal, and a late post-partum myomectomy would have been easy. But the diagnosis of broad-seated cyst (concurred in by Dr. Charles Jewett) made one wary of handling the tumor. The *transposed round ligament* clinched the error. Cæsarean section would have saved the child, but at greater risk to the mother.

DR. BACHE EMMET presented a specimen of

COLLOID DEGENERATION OF A FIBROMYOMA.

A large fibromyoma had completely filled the pelvis and a greater portion of the abdomen, causing pressure symptoms. The uterus itself was only slightly enlarged. Microscopical examination showed the tumors to be fibromyomata, one of which had undergone colloid degeneration. Dr. Emmet, quoting Bischof, Williams and Senn, called attention to the important difference between simple edema and myxomatous changes, which clinically may be regarded as perfectly benign, but which pathologically may be transformed into sarcoma by connective tissue proliferation.

DR. DOUGAL BISSELL said he had twice seen the condition. One case followed three or four days after a laparotomy; the other occurred in the past week. There was no sore throat, and the temperature did not rise above 100° F. Prior to the operation there had been a temperature of between 101° and 102° F. Operation was demanded because of a cellulitis and a tubal condition following an abortion. Section was made, and no pus was found, but the temperature immediately went down and the patient was much relieved. On the fourth day, the condition described by Dr. Edgar developed. With regard to the possibility of intestinal poisoning, he would say that they had been very careful regarding the diet in these cases, so that he thought this could be eliminated.

DR. ROBERT A. MURRAY read a paper on

FIBROMYOMATA COMPLICATING PREGNANCY.¹

DR. BACHE EMMET said that he had never been called upon to operate in these cases, although he had witnessed a number of cases of labor in which tumors were present. Fortunately they had all been above the brim and subperitoneal. He had seen them soften and flatten out during pregnancy, becoming almost imperceptible. Afterward they would make their appearance in such a shape as to cause surprise to those not familiar with the effect of pregnancy upon them. He recalled, however, a case of nodulated pregnant uterus (four and one-half months) which he had taken out because of pain and that it seemed impossible that such a uterus could develop to term without accident. At the time of the operation he had hesitated about doing myomectomy although it would have been a very laborious operation. The entire mass was taken out, thus making a very interesting specimen with the fetus at os with unbroken membranes. The question of myomectomy naturally came up in all these cases—whether one should sacrifice the uterus or allow the pregnancy to go on to term. He thought the subject had been brought to a climax by the author of this paper in the statement that every case should be a study

¹See original article, page 485.

in itself, and that the obstetrician should be guided by general principles and special indications.

DR. H. L. COLLYER thought that all present must have had some experience with fibroid uterus in pregnancy. He had found that cases having fibroid tumors, especially interstitial and submucous, were not so apt to conceive as those having subperitoneal fibroids, and when they did so each case must be an individual study. Many of these cases would progress favorably until labor, and then hemorrhage become the principal danger. In many cases, especially those in which the fibroids were large and subperitoneal, adhesions to adjacent organs and parts formed, and thus made abortion liable to occur. When abortion occurred under such circumstances he saw no other way than to thoroughly curette the uterus. Mention was made of a case of very large fibroid tumor filling the pelvic cavity, and associated with a retroflexed uterus. The woman refused to have anything done, but a fright brought on a miscarriage, and the ovum was expelled intact at about the third month. Where there were many subperitoneal or interstitial fibroids complicating pregnancy the case should be most carefully and anxiously watched. It was a question in his mind whether it was not well to let the woman go on and take the risk, especially if it were the first pregnancy.

DR. J. CLIFTON EDGAR said he did not think there was any question that pregnancy caused fibroids to grow rapidly. Personally, he thought that fibroids did not often have any serious effect upon pregnancy. Any one who had seen much obstetric work among negroes must recall many such cases in which no operative interference was required. The tumors certainly did not interfere, as a rule, with pregnancy, but it was a very different proposition when one came to parturition or the puerperium.

The effect of pregnancy upon the rapidity of growth varied greatly in individual instances. He recalled particularly a case, seen in the practice of Dr. Mendelson. The tumor grew so rapidly that it was necessary to interfere within a fortnight. Fibroids rarely interfere with pregnancy, but every case must be watched and treated in accordance with the special conditions present. As the case approached full term the more dangerous did the tumor become.

DR. R. L. DICKINSON said that there was an interesting feature connected with some fibroids during pregnancy. The ordinary fibroid was the most bloodless of tumors; it was hard and capable of section without bleeding. That same tumor during pregnancy was one of the most bloody of tumors. A slight touch upon the tumor which he had presented this evening made the blood pour from it, so that clamps had to be rapidly applied. When the uterus was swiftly amputated above the cervix there was a reflux deluge. He had had another tumor of about the same size in a negress. Apparently the tumor was in a safe place, well above the internal os on the posterior wall of the uterus. The tumor was about the size of a lemon, was movable and well above the promontory

at the third month. He had counseled watching this case, and this had been carefully done. As the pregnancy went on, the tumor came well above the promontory, but at the sixth month there was a huge, soft mass, like an ovarian cyst, entirely filling the cavity. There were also severe pressure symptoms. He opened the abdomen and found an acute edema of the fibroid. He removed the child, the tumor and everything at once, and the patient made a good recovery. Dr. Murray's interesting case illustrated, as did his own, that there was no place in which the tumor was certainly safe, and that at any time strangulation, edema and enormous vascularity might endanger the life of the patient.

DR. EGBERT H. GRANDIN said that the specimen presented by Dr. Murray was, in his opinion, typical of the only class of cases which would interfere with the progress of pregnancy, *i.e.*, those fibroids which occupied the lower uterine segment; those fibroids which, in consequence of the progress of pregnancy, would become incarcerated below the pubes and the sacrum. In that specimen there was no choice; the fibroid occupied the lower uterine segment and was wedged below the symphysis. If Dr. Murray had not interfered, the fibroid would have undergone pressure necrosis, which would have resulted in septicemia and miscarriage, and abdominal section would have been indicated. The necessity, then, of operating upon fibroids during pregnancy depended entirely upon the site of the fibroid. If the fibroid occupied the lower uterine segment, anteriorly, posteriorly or laterally, operation would be called for; otherwise not. When the fibroid occupied that portion of the uterus which would rise above the pelvic brim as the uterus enlarged, operation was not called for, but watchful expectancy was always demanded. These fibroids would give rise to trouble during labor or in the puerperium. During labor there would be a condition of inertia. During the puerperal state, *i.e.*, within the thirty-six or forty-eight hours following delivery, postpartum hemorrhage was liable to occur. His own experience had taught him that, in the ordinary run of cases, fibroids which could rise above the brim with the uterus, and which did not give rise to anxiety during pregnancy, were apt to enlarge concomitantly with the uterus, and would involute with it. He had in mind a great many cases which he had seen in which, during pregnancy and at the time of delivery, he had noted these nodules, and yet eight or ten months after delivery he had been almost unable to determine the presence of a fibroid. The nearer the fibroid became interstitial the more must that fibroid of necessity grow as the uterus does and it must necessarily involute with the uterus. This seemed to him to be the whole gist of the subject. Such a radical operation as the one forced on Dr. Murray would not, of course, always be required; in the instance under discussion the fibroid had such a broad base and involved so much of the musculature of the uterus that myomectomy was not feasible.

DR. JOSEPH BRETTEAUER said that all present must, in the main, agree with the author of the paper. His own experience had

led him to think that, in a good many of these cases, conservatism was apt to be carried too far, as for example, in shelling out fibroids from a pregnant uterus. The very congested state of the uterus and of these tumors made this process much more serious than in the non-pregnant state. No matter how small or what kind of a needle was used, every stitch-hole would bleed actively, and, hence, the wound should not be closed until the operator was absolutely certain that there was no more bleeding from the line of sutures.

DR. A. PALMER DUDLEY agreed, in the main, with everything that had been said, and especially with the remarks of Dr. Grandin. In his judgment, the effect of fibroids upon pregnancy depended upon the location of the fibroids, whether the latter were pedunculated or sessile. He believed that the fibroid presented by Dr. Murray was located in the most dangerous position possible in the pregnant uterus. These tumors grew rapidly if sessile or interstitial when pregnancy was present, often growing more rapidly than the uterus itself. The specimen of twisted uterus presented by Dr. Dickinson was exceedingly interesting. As the fibroid already occupied the normal position of the uterus, the latter had to give way to the fibroid. If the major portion of the growth were muscular rather than fibroid, then the tumor would grow much more rapidly than if the major portion were fibroid. Reference had been made to fibroids in negroes. According to his own experience, the major portion of these growths in negroes were interstitial and not subperitoneal. If the fibroid had developed upon any portion of the uterus which would allow the latter to develop and rise above the brim, then the woman might go on to term without difficulty. If the fibroid were in the lower segment of the uterus, then the latter usually developed and crushed the fibroid into the pelvis. This was a most dangerous condition. The effect on pregnancy of fibroids was to deform the uterus and possibly deform the child, and put both the child and mother in danger. Even though the uterus rose above the pelvis and carried with it the fibroid, the man must be an expert who could effect delivery with safety to both mother and child. It should be remembered also that there was a great tendency to sepsis in these cases should miscarriage occur. He believed more women lost their lives from sepsis due to abortion complicated by fibroids than from any other form of fibroid. Reviewing the foregoing facts, he was compelled to say that every one who found pregnancy complicated by fibroid was justified in doing hysterectomy in the early months of pregnancy. Dr. Edgar had reported a case of fibroid in a woman of forty-eight, a fact which showed that the age of the patient did not have to do with the growth of the fibroid, but rather the location and the blood supply. The remarks of Dr. Brettauer were very *apropos* in this connection. The danger of hemorrhage in these cases of fibroid had been very properly emphasized, and the chances from myomectomy in the pregnant state were so bad that he thought this operation was not justified in pregnancy.

TRANSACTIONS OF THE WOMAN'S HOSPITAL SOCIETY.

Meeting of January 26, 1904.

The President, J. RIDDLE GOFFE, M.D., in the Chair.

DR. HERMAN GRAD.—I was asked about three weeks ago to help a physician in an obstetrical case. The patient had been in labor about eighteen hours, and it was her fifth pregnancy. She was about 36 years old. Had always had an easy labor, but this time difficulty was encountered. I administered the anesthetic and the doctor put on the forceps but they slipped; he replaced them and they again slipped. The position was an occipito-posterior very high up, the head not having engaged. There seemed to be a shortening of the inlet of the pelvis. The forceps were again applied but we could not engage the head, so turning was suggested. The doctor turned the case, and delivered the body very readily, but the head stuck and he delivered it only after using considerable force. I had my hand on the pulse and I noticed it was getting a little feeble. The doctor then tried to deliver the placenta, as there was a considerable hemorrhage, and while doing so he said "I feel a mass. I think it must be a fibroid." Failing to deliver the placenta he asked me to make the attempt. In the vagina I felt a globular mass. I noticed that the mass was smooth and realized that I was handling the outside of the uterus, that the organ had ruptured and we had gone into the peritoneal cavity. The uterus closed so tightly over the placenta that it was impossible to enter the cervix and deliver it. I suggested to leave the placenta undelivered and send the patient where a section could be made, as she was in a tenement house. We sent her to the 17th street Infirmary and they found four different lacerations in the uterine wall. She did not survive the shock and died. This was her fifth child, every one of the others having been born without trouble. The last baby was born a little over a year ago, and in that time this peculiar condition, narrowing of the pelvic inlet, must have occurred.

An explanation of the rupture of the uterus in four different places might be the fact that it was a dry labor. Eighteen hours before, the uterus was firmly contracted over the body of the child; and in manipulation the uterine wall tore. It is probably best, as has been recommended, to do craniotomy in these cases, rather than run the risk of rupturing the uterus. We considered the feasibility of doing this, but the people, being Roman Catholics, objected to anything of the kind.

The head was not larger than we would expect in a baby weighing $7\frac{1}{2}$ pounds. It was not a hydrocephalus; there was nothing

wrong with the child. It died in delivery. It took over a half an hour to deliver the head.

DR. BROUN.—This narrowing occurred after the last birth?

DR. GRAD.—It must have occurred after the last child. There had been no trouble with the four previous children.

DR. BROUN.—Is it common to have narrowing occur in women of that age? Was any physical change noted?

DR. GRAD.—The doctor said during pregnancy the woman seemed to be perfectly well.

DR. BROUN.—I do not quite understand how, unless there is some general physical change in the woman herself in the way of bone disease, there could be a change in the pelvis after the organs are formed.

DR. GRAD.—There were no symptoms of osteomalacia.

DR. BROUN.—Was the doctor positive there had been no change?

DR. GRAD.—He had attended the last two babies—there was no trouble. He said he never could get to the bedside before the baby was born. There was never any operation before.

DR. JOSEPH C. TAYLOR.—I do not see what disease could attack the bony formation of a woman's pelvis at 36 years of age. In tuberculosis the bones would break before they would change.

DR. GOFFE.—I should question very much the change in the diameter of the woman's pelvis. There must have been something in the presentation of the head that interfered there, I should say, and caused the rupture of the uterus, which may occur in the hands of almost anyone. I should think it indicated extremely rough manipulation, to have the uterus torn in four places in the simple matter of turning.

DR. SHAILER.—Where was the uterus torn?

DR. GRAD.—The posterior wall.

DR. GOFFE.—The different parts of the child's anatomy must have protruded from the uterus. You say in the vagina you felt the peritoneal surface of the uterus?

DR. GRAD.—The doctor thought it was a fibroid; then I felt a smooth surface and I saw at once that I was handling the outside of the uterus torn all the way up the posterior wall. One entered the peritoneal cavity through the cul de sac at once. She was packed at once to prevent hemorrhage. We did not deliver the placenta.

DR. BROUN.—I have a specimen of double pyosalpinx brought by Dr. Delecroix, of the Manhattan State Hospital. Hysterectomy was done, with uninterrupted recovery. My object in showing the specimen is to emphasize the fact that the large majority of insane patients, no matter what their physical ailments, or the conditions of the pelvis are, cannot locate the seat of their disturbance, and pathological conditions are overlooked unless systematically sought for by a thorough examination of all patients. In this hospital one physician who has become expert in systematic examination examines thoroughly every patient who

enters the hospital, and records all findings. A torn cervix or perineum, an ovarian cyst or tumor or pyosalpinx is recorded, otherwise it would be accepted, as it was many years ago, that there were very few pelvic diseases in hospitals for the insane.

The history of this case was: Patient 32 years old, colored, married. Previous to admission to the hospital, ill four months. One sister insane, one died of tuberculosis, several maternal relatives insane. As to education, reads, writes. Retains positions well, does not spend money foolishly.

In May of 1903, she began to have a very exalted idea of her intelligence. Said scientists addressed her in the street. Complained that the sidewalks slipped from her as she walked. She commenced taking Peruna but stopped it, saying that Christian Science would cure her. Heard voices in her ear telling her she would become white. Burned clothing. Said Roosevelt told her to marry a certain man. September 5th, made a fire in the house and was sent to Bellevue. She was cleanly and quite agreeable. No retardation of flight of ideas, etc. In December was examined and was found to have uterine fibroid.. Disease of both adnexa. Menstruation regular, painful since entering hospital. Before that, irregular, profuse, sometimes once in two or three weeks, sometimes once in three or four months. Three miscarriages, one full term baby.

A patient with salpingitis and dense adhesions, could not help having symptoms arising from these conditions, but she gave no manifestation of them in her complaints as such patients usually do. Dr. Manton, of Detroit, thinks that insane persons may, in expressions that would pass for delusions, give an inkling of some localized condition. He has at times opened the abdomen on complaint of a patient having certain things in it, and found nothing. At other times, serious conditions have been present with no complaint at all.

DR. GOFFE.—How is the history of these cases obtained? As to regularity or irregularity of menstruation, etc., do you depend upon what the patient says?

DR. DELECROIX.—No. Those details are obtained from friends.

DR. GOFFE.—Dr. Manton claims that a large percentage of the insane suffer from jaundice. Do you find that to be the case?

DR. BROWN.—I have seen only one case of jaundice.

DR. DELECROIX.—A patient with carcinoma of the breast may have a lump and pay no attention to it. In such cases the condition has been discovered only by the nurse when bathing the woman. These things are anticipated now. Cases have come in undoubtedly insane for a number of years, cases of cancer of the breast or lip, so advanced as to be inoperable, and other cases, appendicitis, etc., which should have given pain, which were apparently unnoticed by the patients. Others say they have something inside—devils or gods—and on the post mortem table, nothing is found to indicate any abnormal growth. From a neurological point of view segmental nerve lesions are not localized

and there frequently is nothing to indicate disease. There may be a lump over the eye which would be diagnosed as syphilis, with no complaint of pain, no discomfort. One such patient died, and upon autopsy it was found that the right kidney and both ovaries were involved, the intestines were matted together, and there were numerous foci of cancer in the brain except in the cortical portion, showing they had existed several months. This shows how little evidence these patients can give of physical ailments. In the matter of history—a patient is brought in and a physical examination is made of heart, lungs, nervous system, respiratory tract, pelvic organs and urine, a blood count is made, etc. Examined mentally. If she has pain at the nape of the neck, or the top of the head, ovarian pain, or thinks the brain is coming out, or the bowels are stopped up or the tongue is coming out, a rigid examination is made. Imaginary evidences of diseases are invariably found without any organic basis. Individuals who have real organic lesions very seldom make any complaint. It is hysteria and the line between that and insanity is rather imaginary. One cannot state that an individual classed as hysterical, either male or female, is not insane. The degree of hysteria has to be less in women than in men to be called insanity. A man is allowed a great deal more latitude in hysteria than a woman is before being committed. As to ocular evidences of insanity,—the percentage of myopia and astigmatism is no greater in the insane than in the sane.

DR. GOFFE.—Do you mean to imply that physicians now recognize hysteria as a form of insanity?

DR. DELECROIX.—Hysteria is not a disease per se, but I say the dividing line between that and insanity is not so marked. The opinion in the various countries is at great variance on this point. The French recognize it as a disease entity and the Germans do not.

DR. SHAILER.—When do you decide to operate on these cases that have no pain?

DR. DELECROIX.—When physical conditions call for it. We take into consideration physical health as aiding mental recovery. If a patient has organic changes affecting the mental condition, that patient is not going to get well. In any condition except paresis we attempt to eradicate the cause of insanity.

DR. LE ROY BROWN read a paper on

ROUND LIGAMENTS, THEIR ANATOMY AND FUNCTIONS.

It is surprising and disappointing to find so little mention made of the round ligaments by most writers. When spoken of in works on gynecology and obstetrics it is generally in a few lines and then only to give their presence and course. Any effort to outline their functions would appear to be studiously avoided by most authors, either as a question upon which we are not united, or as one of so little importance as to require but a passing notice. The necessity of a careful description and study of their struc-

ture and functions has, however, become evident; as is shown in the more complete reference made to them by Deaver in his *Surgical Anatomy*, and by Williams in his late work on *Obstetrics*.

Taking up first the anatomy of the ligaments we find that the uterine attachment is immediately below and in front of the junction of the Fallopian tube with the uterus. For some two inches of its course from the uterus it is a flattened band of muscular and fibrous tissue.

The *course* of the ligaments from their origin is upward and outward beneath the anterior layers of the broad ligament to the brim of the pelvis. Each ligament then crosses the external iliac vessels and turns forward to the outer side of the deep epigastric arteries, where it passes through the internal abdominal ring to enter the inguinal canal. In the inguinal canal the ligament is accompanied by the sheath of peritoneum with which it was surrounded on passing through the internal abdominal ring. This surrounding sheath in the canal is called the "*processus vaginalis*" and usually becomes obliterated. At times it remains patulous after birth and takes the name of the "*canal of Nuck*." After passing through the external abdominal ring the ligament breaks up into small fasciculi which ramify through the connective tissue of the *mons veneris*. The *Funicular artery*, a branch of the superior vesical, together with a small plexus of veins are found in the round ligament as also in the canal is found the genital branch of the *genito-crural nerve*.

Structure.—The round ligament is made up of muscular and connective tissue. The muscular fibers are of two kinds, plain or non-striated and striated.

The plain fibers exist chiefly in the inner third of the ligament (that portion nearest the uterus) and are a prolongation of the outer muscular layer of the uterus. These fibers are easily recognized as far as the internal ring though not so plainly made out beyond this. While this is the accepted view of the extent of the distribution of the plain fibers, I am convinced that a further study of the subject will show that they exist throughout the entire length of the ligament, though probably not so abundantly in the inguinal canal. My reason for thinking this is, that while shortening the round ligament in a patient two months pregnant, it was noted that the ligament had increased to double its normal size and was extremely vascular. This change of vascularity and size in the ligament was in the part resting in the inguinal canal as well as in the intraperitoneal portion. This increase in size of the inguinal portion could not take place unless the muscular structure was of the same character, and continuous with, that of the uterus.

The striated fibers are found only in the distal portion (inguinal portion) of the ligament and are acquired from the internal oblique and transversalis muscles. In the male, the same,

though much more marked prolongation of fibers from the internal oblique forms the cremaster muscle.

The fibrous tissue forming the basis of the round ligament is of firm character and can be traced through its entire length.

Functions.—The four fibro-muscular or true ligaments of the uterus are from below upwards: 1st, the utero-sacral; 2d, the utero-pelvic, otherwise known as the cardinal ligament of Koch, or the ligamentum transversalis colli of Mackenrodt; 3d, the round ligament; 4th, the ovarian ligament.

Each of these has its origin from the muscular wall of the uterus itself and therefore is of the character of the uterine muscle, and, with the exception of the ovarian ligament, each is inserted at some fixed point; the utero-sacral at the sides of the sacrum; the utero-pelvic into the pelvic fascia overlying the internal obturator muscle, and the round ligament is attached over an angle at the internal ring, to the side of the inguinal canal, and to the external ring. The utero-sacral ligament is the retractor of the cervix. The utero-pelvic ligament springing from the sides of the uterus at the base of the broad ligament has been proven by Mackenrodt to materially assist the uterus in maintaining an erect position.

With a knowledge of the functions of these ligaments we would expect to find that the round ligament, which is of the same character of muscular-fibrous structure and has equally as firm an attachment, should exercise a restraining influence on the movements of the uterus and be a factor in preventing the organ from permanently losing its anterior position. The ligaments rest as a lax cord in the anterior folds of the broad ligament. The uterus when in the normal anterior position subjects these ligaments to no strain. They therefore evidently do not exercise a constant restraining influence. It is a common experience with those making frequent pelvic examination to find when the bladder is distended that the fundus of the uterus is pushed well towards the promontory of the sacrum. If the bladder is now emptied and another examination is made the fundus will be found well forward in the normal position. One of the chief factors in restoring the uterus to the anterior position is the round ligaments. When the bladder is distended they prevent the uterus from being pushed too far backward. When the bladder is empty they are the chief factors in retracting the body of the uterus sufficiently forward, to allow the weight of the intestines to act. It is therefore reasonable when the body of the uterus has fallen behind the promontory of the sacrum and is not bound by any adhesions, to shorten the overstretched round ligaments after the uterus has been restored to its anterior position.

At the commencement of pregnancy the round ligaments increase in vascularity and thickness. This increase in size continues until at full term it becomes about $\frac{5}{8}$ of an inch in diameter. Williams, in his late work on obstetrics in speaking

of the contractions of the uterus during labor, says: "The various ligamentary structures connected with the uterus also take part in the contractions. Of these the most important are the round ligaments which in contracting tend to draw the fundus of the uterus forward and to fix it in position. They can be readily palpated through the abdominal wall and some idea of the intensity of the uterine contractions may be gained from their consistency."

DR. J. RIDDLE GOFFE read a paper entitled

UTERINE LIGAMENTS.¹

DR. TAYLOR.—It strikes me that intra-abdominal pressure is a factor in keeping the uterus in position in the pelvic cavity. I will quote the history of a case I saw not very long ago. A Swedish girl, virgin, about 28 years old, had always worked very hard. She presented herself at the hospital with complete prolapse. Hysterectomy was done and the broad ligament was sewed to the wall of the vagina. There did not seem to be very much tension on the ligament. Evidently this had come on gradually. She first felt pain in the back, the prolapsus gradually becoming complete. Then the utero-sacral gave way and the body of the uterus was nearly out of the vulva. The ligament thus can be stretched almost indefinitely. The fact I wish to bring out is this: The woman worked constantly, bending over the wash tub, etc., and there was intra-abdominal pressure. There are two factors—the muscles contracting all the time with nothing to resist them but the levator ani muscle below, and as Dr. Goffe brought out, the specific gravity of the contents of the abdomen and pelvis play a very small part in the mechanism. As long as the uterus was in its normal position, there was no tension of the ligament. I think the utero-sacral ligament the most important in this connection, because it keeps the cervix forward; if the cervix is back, the uterus will fall forward. Nature has provided a muscular balance. The tension of the muscles below the diaphragm of the pelvis is strong enough to counteract the tension of the muscles above as a rule. If the uterus comes forward, the intestines are crowded down behind, the floor is gone and the counterbalancing is gone too.

DR. GOFFE.—Your case was a virgin. The floor of the pelvis was not injured. What had given way to allow the uterus to descend?

DR. TAYLOR.—Evidently constant pressure had caused the prolapse. I think the woman over-strained in heavy lifting, and the tension of the muscles had given way under the strain.

DR. GOFFE.—What gave way?

DR. TAYLOR.—The muscles lost their tone; the levator muscles—the diaphragm of the pelvis.

DR. GRAD.—Dr. Goffe's paper has been very instructive. I do

¹See original article, page 490.

not see how the specific gravity theory can hold. While it is supposable that the muscular tissue of the uterus and the muscular tissue surrounding the uterus may be of the same specific gravity I cannot see how that would have such an important function as to sustain an organ like the uterus in its position. I think the utero-sacral ligaments are the most important in this connection. These ligaments are interwoven with the uterine and pelvic fascia. They must hold the uterus with all its weight.

The next question is, how does the uterus descend in a patient where the structures have not been destroyed, as in the case mentioned by Dr. Taylor. The only way it can occur is that the ligaments are absent entirely, or else their attachments are so feeble and slight that they separate from the uterus. I have a patient, an elderly single woman, with complete prolapse, yet the pelvic floor has never been injured. The uterus descends and hooking a tenaculum in it the organ can be pulled down, but not entirely. The ligaments seem to be elastic. I think the fault lies in their attachment or absence, congenital or otherwise. Certainly when the utero-sacral ligaments are in their normal state, they would hold a normal organ of four or five times the weight of the uterus.

DR. BROWN.—There are two kinds of ligaments connected with the uterus—true and false. The false ligaments are the utero-vesical, the utero-rectal and broad ligaments. The utero-vesical and utero-rectal ligaments are simply folds of the peritoneum. The broad ligament is the means by which the vessels and nerves pass from the side of the pelvis to the uterus. There are three or four muscular ligaments—utero-pelvic—and those surrounding the ovaries, which do not concern us.

I did not understand that Dr. Goffe mentioned the utero-pelvic ligaments. They are bands of muscular fibres of the uterus itself passing along the base of the broad ligament and inserted in the pelvic fascia.

Mackenrodt cut through a broad ligament down to this ligament, and the broad ligament still retained its anterior position. He continued cutting through the ligament, and the uterus would not stay up; it fell back, or, in other words, he felt that it was of the utmost importance; as important as the utero-sacral, or more so. Koch called it the cardinal ligament. In this ligament the uterine arteries and veins are imbedded in the same muscular band. I feel that the position of the uterus depends on the utero-sacral and utero-pelvic ligaments.

DR. GOFFE.—In Dr. Taylor's case there is presented a virgin suffering from prolapse. Such a case presents the strongest possible argument in favor of the support of the uterus residing in its ligaments. The floor of the pelvis in this case was intact.

The assertion made by some authors that when a woman is in an erect posture the insertion and origin of the uterine ligaments are in the same plane, is erroneous, I think. This is certainly not the case in the utero-sacrals, and Dr. Broun has just

stated in his paper that the round ligaments pass forward and upward to enter the internal ring. That accords with my observation. The internal ring is the point of traction, and therefore the mechanical point of insertion or support. The whole process of descent originates with the utero-sacral ligaments. If they retain their tone and length the fundus cannot get into a position of retroversion. The first step in retrodisplacement and prolapsus is the sliding down of the cervix into the axis of the vagina. If this happens it must be due to the lengthening of the utero-sacral ligaments. The process of sliding down must go on for a long distance before the uterus reaches the diaphragm of the pelvis or the levator ani muscle. In two cases of prolapsus in virgins I could not detect any weakening of the diaphragm. Taking a deep breath did not make the floor of the pelvis protrude any more than in other cases. I could not see how the structure of the floor of the pelvis had been interfered with at all, yet the uterus had come outside of the vulva. If, in a virgin, we find that condition—the floor of the pelvis entirely intact—and we restore the uterus to normal position by shortening the ligaments and so hold it there, there is presented a convincing illustration of the pathological origin of this condition, which is in loss of tone and gradual stretching out of the ligaments.

I like to speak of the cervix being *up* in the hollow of the sacrum instead of *back*, for when the woman is in an erect posture, the sacrum is the highest point of the pelvis, and if the utero-sacrals hold it *up* the fundus drops to the front, intra-abdominal pressure holding it there. It hangs suspended by the utero-sacral ligaments, while the utero-vesical ligaments limit its play fore and aft.

The round ligament after dissection will sustain ten or twelve pounds. Just what the sustaining power of the utero-sacral ligaments may be I do not know, but under ordinary circumstances the strain brought to bear upon them can be measured in ounces.

DR. TAYLOR.—All who exercise know that there is a strain on the abdominal muscles. If a woman works hard, does she not bring many pounds of pressure on the posterior surface of the uterus by leaning forward and lifting something heavy? If she did not have some balance to offset that, do you not think she would force the whole pelvic contents out?

You have, regardless of specific gravity, the abdominal contents in a state of mobility, but if not, the posterior fibres of the levator ani muscles do not go far from the anterior surface of the cervix. If you put a speculum in a normal vagina and pull them out slowly you will find the levator ani shutting off just in front of the cervix, shutting down and making the diaphragm of the pelvis just anterior to the cervix. If you do not have some tone of muscle below to counteract the muscles above, do you not think the ligament would, in time, give way?

DR. GOFFE.—Not without loss of time, due to interference with nutrition. I do not think the uterus would come out. I

have known of cases where the peritoneum was torn through into the rectum, the diaphragm being completely destroyed and yet the uterus remained in place.

Indeed, it is the rule, and so recognized, that if the perineum is torn through into the rectum, absolutely destroyed, the uterus stays in place. Any exception to this rule is due to some inflammatory process dragging the uterus down.

DR. TAYLOR.—You take away the support of the pelvis irrespective of the contraction of the muscles above the utero-sacral, which may be strong enough to hold it?

DR. GOFFE.—Yes. When a certain point is reached the round ligaments would come down to limit the descent. They distribute the strain and divide it about equally. The beauty of the uterine ligament is that it is full of fibres which yield a great deal; eventually they will contract and draw the uterus into place. In doing laparotomy the muscles are found to be relaxed. All muscles are relaxed under anesthesia, the same as in a cadaver, yet when the patient comes out of the anesthetic, the muscular ligaments tone up again, and the uterus is restored to its normal level.

HOW THE PESSARY HOLDS UP THE UTERUS.

DR. GRAD.—It seems to me that the pessary gets its support from the pelvic fascia. When the uterus begins to descend and its ligaments are unduly relaxed, or their integrity is destroyed, we introduce the pessary, and this accomplishes its work through the fact that its fulcrum is the pelvic floor, and pushing up the uterus into its normal position it thereby holds that organ there, but its support is entirely due to the perineal body. If that is gone, no pessary can be of any use. The pessary also receives its point of resistance at this place. If this point of resistance is gone, the pessary cannot functionate properly. It is simply this: there is a point of support from which the uterus hangs, if it remains normal we do not need a pessary. If this support is gone and the uterus descends to a lower plane, we utilize a second point of support by introducing a resisting body and push the uterus in its normal position. This second point of support is the perineal body.

DR. GOFFE.—How does the pessary hold the uterus?

DR. GRAD.—The fulcrum of the pessary is the perineal body. The organ is trying to get down to the perineal body. The pessary prevents those two parts coming together.

DR. GOFFE.—You cannot get prolapsus, or even retrodisplacement, unless the utero-sacral ligament is stretched. As this ligament stretches the cervix slides down into the axis of the vagina and when it reaches a certain stage the fundus tips over backward and allows the intra-abdominal pressure to impinge upon its anterior face, whence follow prolapsus and procidentia. To relieve these conditions the uterus must be put back into place, and the slack taken up in the utero-sacral ligaments. This is

accomplished by the pessary on the same principle that a woman puts a clothespole under a clothesline and takes up the slack in the line and makes it hold up the clothes. The pessary takes up the slack in the posterior vaginal wall and the utero-sacral ligament and the uterus hangs suspended over the upper end of the pessary. This is the simplest way of shortening the utero-sacral ligament, but not the most effectual or permanent. These ligaments may be shortened by an operation just as the round ligaments can. The results from shortening them in this way are effectual and permanent.

DR. BISSELL.—The uterus should be replaced before the pessary is inserted. The pessary then acts in maintaining the corrected position by relatively shortening the utero-sacral ligaments. This relative shortening of the ligaments forces the cervix in the normal or posterior position. The fundus is held in the forward position by the intra-abdominal pressure directed on the posterior wall of the uterus. The posterior lever of the pessary is often too sharply curved, and when thus used encourages, rather than corrects, the displacement.

DR. GOFFE.—In some cases you must have an extreme curve to make the vagina hold it. There are two arms of the lever, two arms on either side of the point of support, or fulcrum. The long arm, by pressing upon the anterior wall of the vagina, exerts pressure there to keep the pessary in place.

DR. TAYLOR.—I agree with Dr. Goffe's idea that you take the slack out of the utero-sacral ligament.

DR. TAYLOR.—Does not the intra-abdominal pressure control that? When the womb falls over then the pessary does its work.

DR. GOFFE.—Your idea is that if you have too sharp a curve in the pessary you may crowd the cervix so far to the front that when the bladder fills it lifts the fundus up and allows intra-abdominal pressure to bend it back over the top of the pessary. I think that sometimes happens.

H. GRAD, *Secretary.*

REVIEWS.

THE PRACTICE OF OBSTETRICS designed for the use of students and practitioners of Medicine. By J. CLIFTON EDGAR, Professor of Obstetrics and Clinical Midwifery in the Cornell University Medical College; Attending Obstetrician to the New York Maternity Hospital. With 1,221 illustrations, many of which are printed in colors. Philadelphia: P. Blakiston's Son & Co., 1903.

Perhaps the first impression made upon the reader of this volume is a sense of wonder that it can be the work of a single individual. In many respects it suggests a composite work written by many authors and brought together under the editorial supervision of one man, but it is superior to productions of this class in that it advances the opinions and teachings of one writer only and is free in every way from the confusing contradictions so commonly found in the so-called "Systems" of Medicine or Surgery. On account of its great size, however, and for this reason only, it seems to be more especially adapted to the needs of the active practitioner as a reference book, and to the requirements of the undergraduate student for collateral reading, than as a text-book for use in the class room. This statement cannot be regarded as in the nature of unfavorable criticism, but must be looked upon merely as our idea of the place that the book is destined to fill in the literature of Obstetrics.

Beyond this there is little to be said, for the author has covered every point of his subject so thoroughly and in such a masterly manner that nothing can be added in the way of suggestion and there is surely nothing that one would wish omitted.

The author is to be commended for his departure from the conventional elaborate discussion of the anatomy of the female pelvis, so commonly found in works of this character, with which the student should have familiarized himself in the dissecting room before taking up the study of Obstetrics and which is seldom if ever consulted by the practitioner.

The short section on Rape and other medico-legal questions of obstetric interest is a decided innovation and adds materially to the value of the book.

The important subject of the management of a normal pregnancy, labor and puerperium, is treated in the exhaustive manner which it deserves and, for general excellence and minuteness of detail, is probably not equalled in any other work.

That the text has been revised and annotated down to the very moment of going to press is evidenced by such matters as the elaborate description of the most recent methods of practising pelvimetry with the Neumann-Ehrenfest Kliseometer and Pelvi-

graph and the brief reference to the ill-fated formalin treatment of puerperal septicemia.

The illustrations are of the highest grade of excellence and reach the enormous number of 1,221, a large proportion of which are original and were made under the personal supervision of the author; while the typography and make-up of the volume leave nothing to be desired beyond a little more careful proof reading in some places.

It would be impossible to discuss the different sections of this work in detail and it is enough to say that it is a credit to its author and that it will prove a valuable and lasting addition to obstetric literature.

J. B. C.

THE AFTER TREATMENT OF OPERATIONS. By P. LOCKHART MUMMERY, F.R.C.S.Eng., B.A., M.B., B.C.Cantab., Demonstrator of Operative Surgery, St. George Hospital. Pp. 221. 8vo. New York: Wm. Wood & Co., 1893.

This is a clearly written, practical manual which reflects the most recent teaching in an important but often little considered department of surgery and one which is strangely neglected in nearly all of the text-books. Many of us have at times felt the need for just the information this little volume supplies. After an introductory chapter the author considers the Treatment of the Wound; Hemorrhage after Operations; Shock and Collapse; Post-anesthetic Complications; Thrombosis following Operations; Post-operative Rashes and Drug-poisoning; and the Treatment of the Various Regional Operations.

DISEASES OF THE INTESTINES. By MAX EINHORN, M.D., Professor of Medicine at the New York Post-Graduate Medical School and Hospital, and Visiting Physician at the German Hospital, New York. Second revised edition. Pp. 397. New York: Wm. Wood & Co., 1904.

The second edition of this well known work, which is a continuation of the author's "Diseases of the Stomach," comes from the press with the few changes that the progress of this branch of medicine during the last four years have made necessary. The first edition, which is now entirely exhausted, met with a friendly reception and established the reputation of the book. The chapters include Anatomy and Physiology; Methods of Examination and Treatment; Acute and Chronic Intestinal Catarrhs; Dysentery; Ulcers of the Intestines; Neoplasms of the Intestine; Hemorrhoids; Appendicitis; Intestinal Obstruction; Nervous Affections of the Intestines, and Intestinal Parasites.

TRANSACTIONS OF THE EDINBURGH OBSTETRICAL SOCIETY. Vol. XXVIII. Edinburgh: Oliver and Boyd, 1903.

This, the twenty-eighth volume of the Society's Transactions, contains a record of its proceedings during the Sessions of 1902-

1903. Dr. Berry Hart, in a paper on the Nature of Deciduoma Malignum, says: "My suggestion is that as a result of the non-development of the embryo before the thyroid develops (fifth week) we get the chorionic tissues unaffected by thyroid secretion, and thus remaining an undifferentiated tissue. Its syncytium and Langhan's layer thus retain their destructive activity, break through the fibrin layer, as Marchand has shown, and may in special cases when not cast off destroy markedly the decidua serotina, and even penetrate the uterine wall. When a part of the mole is retained, its dangerous power lies in its phagocytic burrowing tendency, its penetration of blood-vessels, and its non-coagulant power. It thus gives rise to metastases in blood-vessels, and when unchecked causes death by loss of blood and marasmus. Is it, then, malignant?"

Dr. Oliphant Nicholson suggests the treatment of the auto-intoxications of pregnancy by thyroid extract and notes several cases so treated. He finds that thyroid extract favors the elimination of certain poisonous products of metabolism which must be regarded as the cause of the auto-intoxication and subsequent convulsions.

Dr. H. M. Church presents facts showing the serious dangers to both children from allowing lactation and pregnancy to overlap.

Dr. Richard J. Berry gives an interesting account of the anatomical variations presented by two cases of twin monsters with an account of their developmental explanation.

TRANSACTIONS OF THE AMERICAN GYNECOLOGICAL SOCIETY. Volume 28. Pp. 343. 8vo. Philadelphia: Wm. J. Dornan, Printer, 1903.

This volume contains the papers and discussions brought before the society at its twenty-eighth annual meeting, held in Washington in May of 1903, an abstract of which has already appeared in these pages.

SOCIAL DISEASES AND MARRIAGE. SOCIAL PROPHYLAXIS. By PRINCE A. MORROW, A.M., M.D., Emeritus Professor of Genito-Urinary Diseases in the University and Bellevue Hospital Medical College, New York; Surgeon to the City Hospital; Consulting Dermatologist to St. Vincent's Hospital, etc. 8vo, pp. 390. Lea Brothers & Co., New York and Philadelphia, 1904.

Who can tell the full measure of the misery and destruction caused by the unrestrained spreading of the venereal diseases? What subject is of greater importance to the state or worthy of more serious consideration by the physician, by the humanitarian, by every man or woman? It is known that seventy-five per cent. or more of adult males have been infected by gonorrhea, but it is not so generally appreciated that a multitude of wives have to suffer the blighting consequences.

"The conditions created by the marriage relation render the

wife a helpless and unresisting victim. The *vinculum matrimonii* is a claim which binds and fetters the woman completely, making her the passive recipient of the germs of any sexual disease her husband may harbor. On her wedding night she may, and often does, receive unsuspectingly the poison of a disease which may seriously affect her health and kill her children, or, by extinguishing her capacity for conception, may sweep away all the most cherished hopes and aspirations of married life. She is an 'innocent' in every sense of the word—she is incapable of foreseeing, powerless to prevent this injury. She often pays with her life for her blind confidence in the man who ignorantly or carelessly passes over to her a disease he has received from a prostitute. Such misfortunes do not befall alone the vicious and abandoned women who indulge in licentiousness and irregular living. The victims are for the most part young and virtuous women, the idolized daughters, the very flower of womenkind. They are the women endowed by nature with all those physical attributes of health and vigor which fit them to become the mothers of the race.

"Venereal diseases respect no social position and recoil before no virtue; they ramify through every class and rank of society. Like *pallida mors*, they approach with equal step the habitations of the poor and the palaces of the rich. They constitute the connecting link which unites the virtuous wife and the debased harlot in the kinship of a common disease."

Dr. Morrow gives to us the first comprehensive treatise upon the subject to be published in the English language. His long experience, his well known achievements, his sound common sense, his profound learning, and his literary facility ensure a wide recognition for the volume.

The chapters take up in order: Marriage and Venereal Diseases, from which the paragraph quoted above is taken; Sanitary Safeguards of Marriage; the Medical Secret; Comparative Significance of Gonorrhea and Syphilis; Gonorrhea; Risks to the Health and Life of the Woman; Influence of Gonorrhea upon Conceptional Capacity; Risks to the Offspring; Dangers to the Entourage; Gonorrhea before Marriage; When the Gonorrheic may Marry; After Marriage; Chancroid; seventeen chapters on Syphilis; and four on Social Prophylaxis.

Aside from the interest of the subject and the ease of the diction, the paper, the presswork, the type and general make-up are such that it is a pleasure to read the book.

BRIEF OF CURRENT LITERATURE.

OBSTETRICS.

Treatment of Renal Retention During Pregnancy.—In attempting to catheterize the ureters in a case of renal retention during pregnancy, Octave Pasteau (*Bull. de la Soc. d'Obst. de Paris*, Nos. 6 and 7, 1903) failed. He noticed, however, that the distention of the bladder with fluid for this purpose was followed by increased excretion of urine and fall of temperature. Having made this observation he applied the same treatment in two cases of renal retention during pregnancy, and with apparent success. He found that reflex renal pain occurred at the time of vesical distention. When retention with infection was accompanied by elevation of temperature, the latter fell when the increased excretion of urine took place. The augmentation or diminution of the quantity of urine excreted varied directly with the degree and repetition of distention. The fluid employed is preferably boric acid solution warmed to body temperature. It must be injected slowly, stopping when the resistance of the bladder is felt or when the patient experiences a decided desire to urinate. This treatment must not be employed if the bladder is diseased. With cases of cystitis it causes pain and may lead to serious accidents. Even in the healthy bladder the distention must not be prolonged.

Cæsarean Section.—M. W. O'Sullivan (*Inter. Med. Jour.*, Nov. 20), in view of the markedly improved results in modern obstetrics, thinks that the obstetrician who would perforate the head of a living child in utero places but a low estimate on human life. Where the indications are absolute the operation should be performed at or before the onset of labor. When there is a relative indication it is best to allow the mother every chance to deliver herself, when, if the head still remains movable above the brim, if it shows no signs of molding or advancing, Cæsarean section or symphyseotomy should be performed, instead of resorting to forceps or version.

Treatment of Eclampsia.—A. L. Smith (*Ann. of Gyn. and Ped.*, January) in cases of eclampsia advises the giving of a hypodermatic injection of morphine, followed in five minutes by a hyperdermic of ten minims of tincture of veratrum viride repeated every ten minutes until the convulsions stop or the pulse comes down to forty. Then give a quart of salt solution by enema. No chloroform or chloral will be needed. These drugs, the author believes, have been the cause of many deaths ascribed to other causes.

Prophylaxis of Puerperal Septicemia.—Daniel Longaker (*Inter. Med. Mag.*, November) puts particular stress upon the following points in the prophylactic treatment of puerperal septicemia: Have the patient approach her labor in good health and

free from local disease. To accomplish this one must see his patient in the early months of pregnancy, making periodical examinations, looking especially for evidences of gonorrhea; also he must make monthly examinations of the urine, looking for albumin, sugar, casts and the amount of urea. Gonorrhea should be treated vigorously. The surroundings of the patient should be clean, including particularly a clean nurse. Nothing should be allowed to touch her, especially during labor, with the slightest suspicion of septic contamination. The vaginal examinations should be made infrequently and palpation practised more. All wounds occurring during labor should be carefully dealt with. Nothing should touch the birth canal, especially during the early day of the puerperium.

Treatment of Puerperal Infection.—James H. Burtenshaw (*Inter. Med. Mag.*, November), in treating puerperal infection, tries (1) to remove the source of infection; (2) to neutralize the effects of the septic germs or their toxins; (3) to support the patient's vitality. (1) Retained secundines should be removed by means of a finger, or under certain circumstances with a dull-wire curet, care being taken not to abrade the endometrium. Lacerations of the cervix or vaginal wall should be cauterized. The cavity of the uterus is then to be irrigated with two gallons or more of warm salt solution, or 1 per cent. lysol solution. The two cavities should then be packed lightly with 10 per cent. iodoform gauze, this gauze to be removed in twenty-four hours. After the removal of the second gauze the uterus is to be left alone. The using of a sharp curette he believes to be unjustifiable. (2) To neutralize the effects of the germ invasion it is of the greatest importance to promote frequent and thorough evacuation of the bowel. Promote free diuresis, for this saline solution is the most effective agent. Pryor's method of opening the posterior cul-de-sac and packing the cavity with 10 per cent. iodoform gauze is excellent. Saline injections of normal salt solution are of great value. (3) The patient's diet should be nourishing to the last degree. During the height of the fever, food in small quantities should be given at frequent intervals. Later, when the fever declines, brandy and whiskey should be administered in liberal doses. Ergot, strychnine and quinine are practically always indicated. The temperature should be controlled by sponge baths or ice compresses, but never by drugs.

Extra-Uterine Gestation.—Halliday Croom (*Pract.*, November) does not believe such a condition as primary abdominal pregnancy occurs. Such a thing as ovarian pregnancy is extremely rare if it exists. Pregnancy occurring in the Fallopian tube may be interstitial, infundibular or ampullar. The interstitial variety may be either primary or secondary, caused by the invasion of the uterine wall by a growing tubal pregnancy. In this condition rupture is inevitable and usually takes place about the fifth month and is uniformly fatal. The infundibular form may terminate in what is known as "tubal abortion," sometimes ac-

accompanied with severe hemorrhage, or the ovum may remain fixed in the shape of a mole, or may have the same life-history as the ampullar variety.

The ampullar variety may rupture during the second or third week, causing only slight symptoms. On the other hand, it may go on developing and getting more vascular and rupture from the eighth to the twelfth week. The rupture may occur either into the broad ligament or into the peritoneal cavity, and be followed by severe hemorrhage and rapid death unless quickly operated upon. In making the diagnosis we take into consideration the subjective signs of pregnancy, which may be exaggerated; next we consider the length of time since the last child was born, which is generally a long interval. Another point is that there will often be some utero-ovarian disease. The next point is the amenorrhea, followed by irregular hemorrhages, while another symptom is the localized pelvic pain, paroxysmal and confined chiefly to the side of the gestation. Upon local examination you find a tense, cystic tumor upon one side of the uterus, which pulsates and is sensitive to the touch. The uterus is enlarged and increases in size up to the third month. The cervix is patulous. The decidua is thrown off from the uterus at the third month; it may come away either entire or in shreds. The expulsion of the decidua is the most striking sign, if not the pathognomonic sign of extra-uterine pregnancy. If rupture occurs into the peritoneal cavity the symptoms will be acute and sudden; there is always agonizing pain; there will be the indications of internal hemorrhage, presenting the usual features—shock, syncope and death. When this occurs operate at once. If the rupture occurs into the broad ligament the symptoms are much less severe. When the diagnosis of ectopic gestation is made, the sooner the gestation-sac is removed the better; after rupture, where life is threatened, it is essential.

Rupture of the Uterus During Labor.—T. B. Grimsdale (*Jour. Obst. and Gyn.*, Br. Emp., December) reports a case of rupture of the uterus occurring during labor successfully treated by abdominal hysterectomy. He believes that when this condition occurs it is safest in the long run to use bold measures of treatment, as one does not know how much damage has been done or how much the peritoneum has been soiled, until the abdomen is opened.

Cases in Students' Out-Door Obstetric Practice.—Dr. John F. Winn's (*Jour. of Amer. Med. Assoc.*, Vol. XLI, No. 14, page 847, Oct. 3, 1903) report of his students' out-clinic at the University College of Medicine, at Richmond, Va., presents many points of interest and scientific value. The mortality was low, five deaths in 1,000 cases, or one-half of one per cent. One death was from post-partum hemorrhage, one from eclampsia, one from septic peritonitis supervening upon rupture of gonorrheal pus tube as revealed by autopsy, one from shock complicated by late stages of tuberculosis, and one from apoplexy induced by

eclampsia. Considering that most of the deliveries were under unsanitary surroundings, this showing is the more excellent. The aim has been to impress the students with the danger of infection, and to reduce the system of disinfection and asepsis to the simplest possible technique. Special care is taken in making vaginal examinations. The ante-partum vaginal douche is not employed. The effort is made to keep the hands, and particularly the examining hand, sterile, and both genital and hand disinfection is repeated before each examination. Vaseline is not employed as a lubricant. Reliance is placed on thorough scrubbing of hands and forearms of each attendant, followed by immersion in bi-chloride 1 to 1,000, and in lysol 1 drachm to the pint. The very favorable showing is believed to be due in part to the very scrupulous care bestowed on the genital tract during the third stage of labor, not only in guarding against the invasion of pathogenic organisms, but also in observing the time for, and the manner of, delivering the placenta. The author holds that the hasty or precipitate resort to Credé's method is largely responsible for the incomplete delivery of the placenta and its membranes, and for the sepsis frequently dependent thereon. Every attendant is governed by the cardinal principle that Nature has her own time for separating and expelling the placenta *at full term*, as indicated by a signal easy of recognition, and that any method designed to excite uterine contraction before Nature indicates that the placenta is ready to be cast off must be regarded as not in accord with natural processes. The uniform rule in this clinic is to place one hand over the uterus immediately after the child is born, but no friction is made nor is any effort exerted to excite uterine contractions so long as the uterus remains firm. The slight rising up of the fundus while firm is the signal that the uterus is ready to expel the placenta. The lifting up of the uterus may occur before the average "twenty minutes," or it may be delayed. As soon as it is observed by the "sentinel hand," the uterus is grasped firmly with one or both hands and pressed downward in the axis of the superior strait. If, after waiting three-quarters of an hour, there is still no sign of placental separation, the Credé method is resorted to without further delay. The membranes, instead of being twisted into a rope, as recommended by many, are allowed to trail out, which they will readily do during that normal relaxation which follows uterine contraction. In a general way, all attendants act on the principle that every placenta *at full term*, has its own time to separate, and that it is better to wait until that time arrives before resorting to artificial stimulation of the uterus. By the rigid observance of this rule it has been a rare occurrence in the past few years to have a retained placenta; and no cases of adherent placenta have been met with at all. All students are strictly enjoined to avoid all interference with the genital tract after the child is born, and experience has demonstrated that, just in proportion as this rule is regarded, the puerperium is marked by fewer deviations from the normal.

GYNECOLOGY AND ABDOMINAL SURGERY.

Hemorrhage.—W. K. Walls (*Trans. N. of Eng. Obst. and Gyn. Soc.*, December) reports a case of severe menorrhagia occurring in a girl fourteen years old. General treatment was tried without results. Curetting was performed and a very large amount of thick, pale lining was removed. The patient made a good recovery and has remained well. There was no history of hemophilia in the patient's family or of any infection or possibility of retained products of conception.

Ascending Renal Infection.—John A. Sampson (*J.H.H. Bul.*, Dec.) finds that the vesical portion of the ureter changes under the various degrees of dilatation and of intra-vesical tension of the bladder, and in each case of these conditions one may find special provision for guarding the lumen of the ureter and thus prevent a reflux of urine. Under all conditions of the bladder the direction of the current of urine from the kidney is a constant factor in preventing ascending infection. In addition there are present: in the distended bladder, the very oblique course of the ureter and the long ureteral valve, the lateral walls or labia of the ureteral orifice and the mucosa. In the contracted bladder the course of the ureter is less oblique, the ureteral valve is shorter and they play a less important part in protecting the ureter. On the other hand, additional protection is afforded by a puckering of the ureteral orifice. Under normal circumstances it is probably impossible for urine to pass from the bladder into the ureter. Organisms may be conveyed from the bladder to the kidney by the general circulation, the vesico-utero-ovario-renal anastomosis, the blood vessels of the ureter, the lymphatics and through the lumen of the ureter as follows: (a) By injuries to the intra-vesical portion of the ureters. (b) By the extension of an inflammation from the bladder through the ureteral walls or along the lumen of the ureter. (c) By organisms traveling up the ureter. (d) By a reflux of urine from the bladder into the ureters which may be due to: (1) Intra-vesical pressure forcing the urine into the ureters. (2) Reverse peristalsis on the part of the ureter. (3) By suction of air into the ureters carrying urine from the bladder. Two accessory etiological factors of great importance in the causation of renal infection should be borne in mind, namely: (1) Lowered local resistance; the most frequent cause of this is probably a ureteral stricture due to cystitis or calculus. (2) Lowered general resistance.

Treatment of Gall-Stones.—B. Farquhar Curtis (*N.Y. Med. Jour.*, Jan. 2) believes in operating when the stones are still in the gall-bladder or cystic duct and before grave infection has developed. The serious accidents of infection are avoided and any inflammatory condition which may exist can be improved or cured. The stone is removed before entering the common duct, thereby preventing all the dangerous consequences likely to follow a stone in that passage. Further attacks of cystitis and colic

are prevented and further calculus formation is prevented or impeded, for the stones are formed in infected gall-bladders and the latter may be removed by operation or rendered so healthy by drainage that no more calculi will form. It must be remembered that latent cases are by no means free from danger, even though the patient is free from symptoms for years. The possibility of secondary pancreatitis must be kept in mind as well as the liability to cancer. Patients with gall-stones, although not having any symptoms referable to the gall-bladder, may have various dyspeptic complaints which can be relieved or cured by operation.

Tuberculosis of the Vaginal Portion of the Uterus.—Hiram N. Vineberg (*Amer. Gyn.*, October, 1903) reports a case of tuberculosis of the cervix upon which he operated, but the patient being in bad condition, died six hours after operation. There were evidences of lung involvement. The local diagnosis was made from scraping from one of three ulcers on the anterior lip of the cervix. Tuberculosis of the cervix manifests itself in four different forms: (1) The disease occurs in the form of a cauliflower-like growth, showing some tendency to bleed on being touched. (2) Ulcerative form in which there is usually a well-defined ulcer with sharp undermined edges. The surrounding tissue may be normal or studded with miliary tubercles. The ulcer may be covered with a grayish exudate. (3) The cervix may be studded with miliary tubercles. The diagnosis of this form is comparatively easy. (4) Lastly the tuberculous process may be localized to the superficial epithelium of the glands, constituting the bacillary catarrh described by Schütt. In view of the tendency of local tuberculosis to undergo spontaneous cure under favorable conditions it may be wise in mild tuberculosis of the uterus to first make a trial of a thorough curettage, to be followed by suitable hygienic treatment. The local condition should, however, be carefully watched, and on the return of hemorrhage or enlargement of the uterus a radical operation should not be too long deferred.

Dysmenorrhea.—Émil Ries (*Amer. Gyn.*, Oct.) has tried, with success, the application of cocaine to the mucous membrane of the nose for the relief of dysmenorrhea. He reports four cases of this trouble in which he got very satisfactory results from the application of cocaine to the genital spots in the nose.

Technique of Gynecological Work.—Albert Vander Veer (*Clin. Rev.*, December) advises the wearing of a suit of sterile clothes composed of trousers and gown, also a cap of linen and sterile gauze to protect the head. The operation field having been previously thoroughly washed is scrubbed off with green soap and a cotton ball covered with gauze. Turpentine and ether are used as necessary; alcohol after the parts have been thoroughly cleansed, then a 1-2,000 to 1-5,000 solution of bichloride. In vaginal work the parts are scrubbed with bits of cotton and green soap; next they are scrubbed with alcohol, then are douched with a bichloride solution. In preparing the hands, whether

rubber gloves are to be worn or not, the following procedures should be carried out: (1) Scrub the hands and nails well with the scrubbing brush, the arms somewhat briskly with the gauze scrubbing ball, spending at least five minutes in doing this. (2) Apply to each arm and hand from one to two drams of spirits of turpentine, employ from two to three minutes more in using the gauze scrubbing ball, then plenty of hot sterile water, and when all evidence of the turpentine has been removed make an application of alcohol before using the bichloride solution, 1-2,000—in the basin. Applying gloves at this time we are ready for the operation.

Laceration of the Cervix.—Heywood Smith (*Br. Gyn. Jour.*, November) finds that a uterus which normally maintains a central position will, when the cervix is lacerated, take a fresh bearing from the highest point of the laceration. The sides of the laceration separate, some tension occurs at the angle of the tear. The dragging usually causes pain on the affected side; pain increased upon standing, walking or exertion and relieved by rest in bed. Secondly, we get consequences affecting the nutrition of the cervix. The gaping of the tear causes exposure of the cervical canal, the cervical mucous membrane becomes infected and mechanically irritated and an endocervicitis is caused; to this is added a sub-inflammatory edema, causing eversion of the mucous membrane. The cervical glands become obstructed. The cervical canal becomes inflamed, red, tender and easily bleeds. The parts are bathed in muco-pus discharge streaked with blood. If the laceration is severe the uterine wall at the point of flexion becomes especially thin and yielding. This necessarily interferes with the permanent strength and stability of the uterus on the affected side. Lacerations of a minor degree have no consequences; those of a major degree are a favorite channel for fatal sepsis as well as the above mentioned conditions. It also predisposes to abortion, sterility and epithelioma.

Hematocele.—Paul Zweifel (*Br. Gyn. Jour.*, November) holds that operation upon encapsulated hematoceles is not demanded except by putrefaction of the blood, persistent pain, or exceptional size of the blood tumor; and further, that intervention should, if possible, be deferred till after the formation of a firm capsule. Operation being required, posterior colpotomy should be performed and the blood removed without breaking the capsule. Care being taken that no blood masses are left around the ovum in the tube, for after opening from below such masses always decompose. When such blood masses remain in the tube, for the sake of safety and uninterrupted healing, complete the intervention by laparotomy. When a hematocele has suppurated it must be dealt with from below. When the effusion of blood reaches above the brim of the pelvis, and is therefore considerably larger than a child's head, it should be operated upon. When a hematocele has once formed care should be taken for at least two or three weeks that in case of sudden deterioration (secondary

hemorrhage) in the patient's condition we may be able to operate. In internal bleeding the indication to open the abdomen at once, arrest the hemorrhage and remove all the effused blood, is, of course, not merely valid in case of primary rupture or erosion of the tube, but is equally stringent in secondary hemorrhage.

Hydatidiform Mole.—John D. Malcolm and Hamilton Bell (*Jour. Obst. and Gyn.*, Br. Emp, December) record a case of hydatidiform mole occurring in a woman aged forty, whose last child was born eight years previous. Precautions against conception were employed except on one occasion, three months previous to time of operation. The patient went under treatment on account of severe uterine hemorrhages, the diagnosis was that there was a soft uterine tumor, but that she was not pregnant. At the operation a hydatidiform mole was found and removed. Four days later, the patient's condition being worse, she was curetted, and later the abdomen was opened and the uterus and ovaries removed, which were cystic. The uterine wall was found to be invaded by chorio-epithelioma. The patient, two years after operation, is well. This case is reported to show that a vesicular mole, as regards its structure and potentialities, is to be regarded as the incipient stage of chorio-epithelioma.

DISEASES OF CHILDREN.

Abscess of the Lung Following Acute Pneumonia. A Report of Two Cases.—L. Emmet Holt (*Arch. of Ped.*, January, 1904). About 7 per cent. of the autopsies upon infants and young children reveal abscesses of the lung. The recognition of the condition during life is rare. Case I.—Boy eighteen months old; two months ill before admission to the hospital; fever, rapid breathing, slight cough, with an acute exacerbation of these symptoms during the last week of this time. Signs of bronchitis were heard over the right lung, over the upper left in front, those which lead to an exploratory puncture. No fluid was found, and the case was regarded as one of pleuropneumonia and its termination in empyema was expected. Eight days after admission the temperature jumped up to 105° F. and the leucocyte count to 45,000. The needle showed thick, creamy, odorless pus. Upon opening the chest the lung was found firmly bound to the chest wall. The next day 1½ ounces more of pus were aspirated. From this time on there was steady improvement. A few days later puncture in two places was negative. When discharged, the boy had gained three pounds in weight and looked well. He still had somewhat rapid respirations and a moderate cough from the pleuritic adhesions. Case II.—Boy two years and ten months old; fairly typical lobar pneumonia of left lower lobe; the temperature fell to normal on the eleventh day, but remained so only twenty-four hours, and then ran a slight, irregular course for five weeks. During this period the signs did not change; there was moderate dulness over the left lower lobe, feeble bronchovesicular breathing, pleuritic friction sounds and coarse râles.

Ten weeks from onset there was a rapid rise of leucocytes to 63,000. An exploratory puncture at the level of the angle of the scapula to its inner side showed thick, yellow pus. Upon cutting down at this point the lung was found firmly bound to the chest wall by old adhesions. By blunt dissection, an opening was made to depth indicated by the needle which located the pus. Free drainage was established, and in four weeks the wound had healed completely. The presence of coarse pleuritic friction sounds over the dullest area, together with the difficulty in finding pus with the needle, and a high leucocyte count, 40,000 to 50,000, point to abscess of the lung.

Effects and Treatment of Adenoids.—H. M. DeJarnette, M.D. (*Ped.*, November, 1903). When a child has an apathetic expression, breathes through his mouth, snuffles, holds his head back, cannot hear well, over-lapping upper teeth, arched palate, is dull and stupid at books, walks in his sleep, has nightmare, is fidgety and restless, and does not grow as a child should, you need hardly examine for adenoids. Treatment is simply to remove the diseased tissue, preferably with forceps or curette.

The Open-Air Treatment of Bronchopneumonia Complicating Whooping-Cough.—Claude B. Ker, M.D., F.R.C.P. (*Scot. Med. and Surg. Jour.*). The start was made with four cots placed in a sheltered position, but completely uncovered. The children were carried out and left for about six hours daily. The cases were selected from the worst in the wards, and were regarded as hopeless. No bad results were noted, and there was a very marked improvement in some of them. The main contraindication to the treatment was the presence of laryngitis. The children were warmly covered, and the chest was carefully protected with cotton wool. The main effects of the treatment were as follows: The whoops were unaffected in number or severity; in other words, there is no favorable influence on the infection itself. They took their food ravenously, and their general strength was much improved. They also slept very much better. If, from wet weather, they were kept one or two days in the wards, they rapidly lost both their appetite and their sleep. The whole nervous tone of the children seemed better and they were much less irritable. The improvement was very gradual, but both temperature and respirations were considerably lower after a week's treatment, and cyanosis became much less. Another very practical advantage was the rest given to the wards. Bronchopneumonia of hospital origin became almost extinct. When, for the sake of the nurses, it became necessary to give up for the winter the out-door treatment, all the sashes were taken from the windows in a ward, so that two sides of it were open. This answered very well and most of the bronchopneumonia cases were treated there during the winter. With the old methods of treatment the hospital death-rate of bronchopneumonias complicating pertussis was 71 per cent.; the out-door treatment reduced this to a little over 26 per cent. At one time it became necessary,

for administrative reasons, to again treat these cases in an ordinary ward, with the result that the death-rate rose to about 59 per cent. Broadly speaking, under the old conditions, two out of three children with bronchopneumonia died; under the new, two out of three recovered.

Conclusions from Fifty-One Intubated Fatal Cases of Laryngeal Diphtheria.—B. R. Shurly, M.D. (*Ped.*, Detroit, Mich., November, 1903). In the first series of thirty-one fatal intubations occurring in 100 cases, death was caused as follows: Bronchopneumonia, 5; bronchopneumonia and sepsis, 6; extension of membrane and sepsis, 15; bronchopneumonia, extension of membrane and nephritis, 2; cardiac paralysis, 3. The mortality under three years was 49 per cent., while over three years it was 19.6 per cent. Ninety of these cases had no antitoxine until after the operation. In the second series of 100 cases intubated there were twenty deaths. Here the mortality under three years fell to 29.2 per cent., while over three years it was only 12.1 per cent. In this series 72 cases received no antitoxine until after intubation. It is not sufficiently realized that the question of a few hours in the use of antitoxine may turn the tide against us. Each fatal case of laryngeal diphtheria demonstrates with mathematical exactness that the patient died of the extension of the membrane or sepsis, and the sequelæ; both of these conditions are preventable by administering a curative dose of serum on the first day of the disease. In the fatal cases where lymphatism was present the processes were very rapid. Antitoxine, per se, cannot be held responsible for a single death; insufficient dosage, however, will explain the great majority of them. Three deaths can be assigned to accidents of operation: one by the breaking of an obturator, the end coming before another could be obtained; two died from membrane plugging the tube; where the membrane is below the tube, and when this danger is apparent the string should be left attached to the tube for some hours.

A Review of Recent Literature on Diphtheria.—Claude D. Ker (*Pediatrics*, November, 1903) discusses the question of diagnosis, especially the views of Marfan and those of Grancher, of Craiger, of Ball and others. He takes up *Diphtheria as a Disease of Person*, a paper by Heaven. The more careful supervision of suspicious cases, especially of those not clinically suffering from diphtheria, yet showing it in cultures. *Causes of Death* (Barbier): The two causes, especially considered, are cardiac thrombosis and tuberculosis. The former, he believes, is often the real cause of death when toxic myocarditis and paralytic conditions have been assigned. He found antemortem thrombi in 37 out of 71 autopsies on fatal cases of diphtheria. In 19 cases a bacteriological examination was made of the clots; one of these was negative; all of the others showed the bacillus of diphtheria; in three of these it was alone. *Tuberculosis in Diphtheria.*—In 18 of 45 necropsies Barbier found tubercular lesions; 12 of them showed recent processes. He believes that diphtheria lights

up preëxisting tubercular processes and that this aggravates the diphtheria. *Unilateral Paralysis of the Palate*.—Aubertin and Babonneix report three cases. In two of the cases the false membrane was limited, or nearly so, to the right side of the fauces, and in both extended over the right side of the palate, the side which suffered from the paralysis. Three other similar cases, observed by Colin and Acker, are given. The conclusion seems to be that there is a very intimate connection between the original site of the inoculation and the resulting paralysis. *Intravenous Injection of Antitoxine*.—This contribution is by Cairus. He uses large doses, up to 30,000 units. Certain cases which show no improvement with antitoxine subcutaneously given, react at once to the intravenous injection. It seems especially efficacious in cases complicated by bronchopneumonia, the pulse, respirations and temperature usually being quickly reduced. In malignant cases with much cervical adenitis and very bad throats the new treatment was equally successful. Taking the results together, Cairns claims, first, that the signs of marked toxemia rapidly disappear, that the restlessness, so marked in bronchopneumonia cases, ceases almost immediately after injection. *Lavage of the Blood in Diphtheritic Paralysis*.—Schoull tells of a case of extreme paralysis which failed to improve under the usual methods of treatment. He then tried, with marvelous result, the putting of a large number of leeches in the neighborhood of the anus, and injected litre of Hayem's serum to "wash the blood." *Intubation*.—This is discussed at considerable length, the fact being brought out very forcibly that as yet, in Great Britain, tracheotomy is the operation of choice.

Scarlatinal Panotitis; Exfoliation of a Portion of the Labyrinth; Radical Operation.—Carl Koller, M.D. (*Med. Record*, Jan. 30, 1904). The scarlatina eruption was followed in two days by the appearance of a diphtheritic membrane in the throat. The first evidence of any trouble with the ears appeared at the end of the first week; pain and deafness quickly followed by a double otorrhea. Deafness became absolute inside of twenty-four hours of the appearance of the ear symptoms. When, four weeks later, the patient first got out of bed, she was dizzy, had a staggering gait and frequently stumbled. Two months from the onset of the illness a radical operation was performed on the left side, thoroughly exposing the cavities of the middle-ear. The antrum and attic were found filled with pus and granulations; the ossicles were found imbedded in granulations. A sequestrum was removed from the medial wall of the attic, which proved to be a part of the labyrinth, consisting of the superior and external ampullæ, and the adjoining parts of the saggital and horizontal semi-circular canals. The facial nerve was exposed, but not injured. The patient made a good recovery, but is absolutely deaf. The remainder of the article discusses quotations from Pollitzer and v. Gaessler on panotitis.

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ORIGINAL COMMUNICATIONS.

UNSETTLED QUESTIONS IN ABDOMINAL SURGERY.¹

BY

JOHN G. CLARK, M.D.,

Professor of Gynecology in the University of Pennsylvania; Gynecologist in Chief
to the University Hospital, Philadelphia, Pa.

IN deference to the advice of your Secretary for a paper upon some practical subject I have selected certain problems which have recently presented themselves for solution in the rapid evolution of pelvic and abdominal surgery. The widespread tendency throughout the United States, not only for the gynecologist, but likewise the general surgeon to extend their operative activities to all parts of the abdomen has given rise to a question as to whether gynecology as a specialty is not to be merged into the broader field of abdominal surgery. In one paper taking this view-point, Dr. Kelly has spoken of "the passing of a specialty," but I am glad to find that in a revised address he has changed the expression to "the expansion of a specialty," which much more nearly designates this evolutionary tendency of the new century.

Operative gynecology has been developed in three decades from a field so narrow and, at first, so far below the mediocre as to not even merit its designation as a special branch of medicine, to one of the most perfect of specialties, when reviewed from the

¹Address given before the Chicago Gynecological and Obstetrical Society, February 19, 1904.

general standards of accuracy of diagnosis, perfection of operative technic, and splendid curative results.

The progress of this branch of surgery has been so rapid that many of its details have been rendered quickly obsolete, by the substitution of further improvements which have completed many working hypotheses into well defined surgical laws. It is, therefore, inconceivable that this should be a passing specialty, for the daring work of its founders, followed by the progressive improvements in pelvic surgery which have reduced the death rate in very grave operations from an appalling figure to an infinitesimal one, has unerringly pointed the way to the surgical possibilities in the hitherto undeveloped surgery of the gastro-intestinal tract, the urinary organs, the gall bladder, and other fields within the peritoneal cavity. The new century, therefore, sees the inauguration of this expansion and, as in the opening of all new territories, so here we find both the general surgeon and gynecologist rushing in after the pioneers to stake their claims. Both the general surgeon and gynecologist deserve credit for their work in abdominal surgery. I daresay the unprejudiced medical historian of the future will point to the bold pioneer work of the earliest gynecologists and the splendid achievements of their followers, as the foundation of abdominal surgery; he will likewise give the fullest credit to the inventive and ingenious constructive work of the general surgeons in our own country and in Europe, but especially will many well known American surgeons of the present era leave indelible imprints upon the history of abdominal surgery.

This expansive tendency, however, carries with it the danger that the skill in diagnosis which had been acquired by many gynecologists through a pains-taking study of large series of special cases will be sacrificed and that, while the technical skill of the abdominal surgeon may be maintained or even increased, his diagnostic acumen may be retrogressive. No amount of operative dexterity will serve as a substitute for diagnostic skill or surgical judgment. Therefore, with our tendencies towards expansion I would reiterate that the chief warning of the teacher to the student should be to guard assiduously against the abandonment of the pains-taking methods of diagnosis of the best gynecologists of the present day, for the many times, easy exploratory incisions.

An exploratory celiotomy is a confession of inability, on the part of the surgeon, to arrive at a diagnosis. He who resorts,

therefore, most frequently to this make-shift for what his physical senses if actively employed should often demonstrate shows a deficiency in the true essentials of a good surgeon. That the exploratory incision is a necessary diagnostic measure in certain obscure cases goes without saying, but every exploratory incision should make this necessity less frequent by adding something to the surgeon's diagnostic skill, for lesions may be found which will at once explain certain possibly obscure symptoms, or direct attention to others that had not been fully elicited and consequently had not received judicious consideration. The refinement of diagnosis can only be acquired by the minutest observation of signs and symptoms before operation, and their full revision in the light of the operation. Each obscure case of this character should, therefore, be of the highest educational value, making less and less frequent the necessity for an exploratory celiotomy. Undoubtedly the skill in gynecological diagnosis has largely been acquired by this checking system, and thus the diseases of the pelvic organs have been placed upon a very accurate diagnostic basis. But as yet the same statement cannot be made of the earlier stages of surgical diseases in other abdominal organs.

Relative to the lesions of the pancreas, the bile passages, and the kidneys, there has been considerable vagueness which, however, has already rapidly disappeared under the searching clinical methods of our leading physicians and surgeons. As in the early experience of gynecologists a diagnosis of cancer of the uterus was many times not considered certain by the general physician until cachexia appeared, likewise at the present day one will not infrequently meet good general physicians who will insist that because a patient has not had jaundice, the so-called attacks of indigestion cannot be due to gall-stones. This, however, is becoming a well recognized fallacy, and with the present tendency to resort to earlier operation for suspected gall-stones, there can be no question but that within a comparatively short time many cases which hitherto have been treated for indigestion and various gastric disturbances will be recognized early and have the benefits of an immediate operation for the removal of the foreign bodies.

To further this improvement in diagnosis, and to give the patients every possible benefit from the abdominal incision, all parts of the abdomen should manually be explored in almost all cases in which the symptoms are not fully explained by the pathologic condition for which the celiotomy is performed. We may as-

sume in every abdominal operation that there is a positive and a negative side of the diagnostic and surgical equation. Thus the presence of an ovarian cyst establishes the positive side of the diagnostic equation, and likewise defines the site of the incision in the median line below the umbilicus. The negative side of this equation, however, refers to the other abdominal and retroperitoneal organs to which more or less vague symptoms may be attributable. In former years it was the custom not to extend the exploration beyond the mere site of the operation; no special thought was even given to the appendix, much less to the kidneys, gall-bladder, pancreas, and gastro-intestinal track. All of these organs now are subjected to a searching palpation, and as a result of this new plan of exploration a large number of lesions have been discovered and remedied at one time which hitherto would have been overlooked and subsequently would have either required surgical intervention or the patient would have continued to suffer.

By the carefully routine study of the abdominal symptoms as a whole we find in most instances that the positive side of the diagnostic equation is verified and that the more obscure side may be developed into even a more positive quantity than the ante-operative study of the case had indicated.

Dr. Kelly some years ago called attention to the value of the abdominal incision in the exploration of the gall-bladder, and experience has shown that his method of investigation may be carried still further. In this examination of the abdomen, a topographical cycle as first noted by Kelly, having as its center the umbilicus, may be described which will touch the organs of the abdomen most frequently the seat of surgical diseases. Beginning with the uterus and sweeping outwards the tube and ovary and the pelvic portion of the ureter are examined, then the appendix, the cecum, the ascending colon, the right kidney, the gall-bladder, the liver, then towards the center, the stomach, the pancreas, then sweeping over to the left, the spleen, kidney, and thence downward to the ureter, the descending colon, sigmoid flexure, and back to the left ovary and tube. Within this circle very few surgical conditions are encountered compared with its periphery. After the incision is made the positive side of the diagnostic equation is first verified and corrected. Assuming as an illustration, that a positive diagnosis of some pelvic ailment has been made, the negative side of our equation must deal with the appendix, the kidneys, the gall-bladder, the gastro-

intestinal tract, pancreas, and spleen. It is best in the majority of cases to defer this cyclical exploration until the operation for which the incision was made is completed, and then the examination begins with the appendix, and each organ is in turn examined and careful notes dictated to an assistant.

In the examination of the abdominal viscera above the pelvis a well defined plan should be instituted, for here, as in every part of our work, a system invariably brings better results than haphazard guess work. My own plan at present is to take up the appendix first, for I believe the less serious lesions of this organ are frequently productive of symptoms which so closely simulate those of the minor lesions of the pelvis that a mistake in diagnosis is frequently made if the fullest attention is not given to it.

THE APPENDIX.

The medical profession has long since ceased discussing the question of the removal of the appendix in acute appendicitis; but concerning the removal of the apparently normal appendix in the course of another abdominal operation there has, however, quite properly been considerable doubt. To accurately determine this question one must decide: first, whether the mortality from abdominal operations in which this plan has been pursued is greater than in the same class of operations without appendectomy; and second, what proportion of these presumably normal appendices have shown actual evidences of disease when submitted to histological examination. However, before taking up these points the median incision as a route through which to reach the appendix may be considered. So far as my own experience is concerned, the appendix may quite as easily be removed in the largest majority of cases through the central as through the incision directly over this organ. When the symptoms are unquestionably those of acute appendicitis, especially where drainage may be a necessity, it is undoubtedly wiser to make the incision at McBurney's point, but as my paper deals solely with the associated operations it is only necessary to consider the approach to the appendix for purposes of inspection and removal through the median incision.

Either one of two plans may be instituted for quickly locating the appendix: the first of these is by touch. The acute angle of the ileum at its junction with the cecum is usually the best guide when the attempt to locate the appendix by touch is made.

With the finger hooked beneath the cecum it is swept around this organ to the ileum which is lightly grasped and thus the cecum may be drawn up into the wound, which at once brings to view the anterior longitudinal band, and this unerringly guides one to the appendix if it is followed persistently downwards. When the cecum is anchored by adhesions this maneuver may not be successful, and then the abdominal incision is lightly lifted upwards with the retractor, when the cecum may be located by sight, and with blunt forceps gently drawn forwards into the wound. In all abdominal cases, when the patient is intelligent, I am guided by her decision relative to the removal of the appendix. To this class of cases I usually state my personal position, namely, that if I were to have a celiotomy performed for some other condition I would instruct my surgeon to remove the appendix, but to free myself from exercising any undue influence, I further state that the dangers of the operation are slightly increased by this extra operation.

According to this rule in 120 celiotomy cases in the University Hospital, in which some other disease formed the primary basis for operation, the appendix has been removed. Pathological examination of these cases shows the following:

Normal appendices	25
Periappendicitis	39
Appendicitis, catarrhal (15 mild, 3 chronic)	18
Appendicitis, chronic (4 mild)	13
Appendicitis, obliterative	8
Appendicitis, acute	4
Hyperplasia of lymphoid elements in appendix	2
Appendicitis, mild acute	3
Fecal concretions in appendix	5
Appendicitis, interstitial	1
Carcinoma of appendix, primary	1
Pressure atrophy of appendiceal mucosa due to kink	1
Constriction due to previous catarrhal disease	1

Thus it will be seen that while the largest proportion of these appendices were looked upon at the time of the operation as essentially normal, there were nevertheless a large number which were either inherently diseased or were inflamed as the result of association with inflammatory lesions in the pelvis. Thus 39 cases of periappendicitis were noted, four of acute appendicitis, and one very rare condition, a very early primary cancer of the

appendix. In the latter case the patient was operated upon one year ago and as yet there has been no evidence of a recurrence of the cancer. From this table it would appear, therefore, that the routine removal of the appendix as a coincident part of another abdominal operation is based upon a very appreciable pathological basis. If we were to make a comparative prognosis in these 120 cases with and without the removal of the appendix, there can be no question but that the ultimate mortality and especially the morbidity in the same cases with the appendix left would be very much greater than those without it.

In this series of 120 cases only one patient died, and this death came from causes in no way attributable to the operation upon the appendix. Therefore, so far as the direct influence of the appendiceal operation upon the recovery of the patient is concerned, it may be said not to have produced one single death. If, on the other hand, these cases were to have been discharged from the hospital without this additional operation one dare not say that any such future possibilities for perfect health could exist; for there were 39 cases of periappendicitis, some of which inevitably would have produced more or less disability. There were 18 cases of catarrhal and 13 cases of chronic appendicitis, some of which would, sooner or later, certainly have become suppurative. Four were acute, which doubtless would have given rise to serious symptoms or even death of the patient during the immediate convalescence from the pelvic operation. While the case of primary carcinoma of the appendix was an accidental discovery and as it would not probably occur again in 1,000 cases it should hardly be considered a statistical possibility, nevertheless this patient's life was saved by the removal of this organ.

If, therefore, I had been in doubt before as to my personal rule concerning the removal of the appendix as an associated operation when the abdomen is opened for other causes, I would unqualifiedly declare in its favor, and would sustain this declaration by the foregoing pathological data.

GALL-BLADDER.

If an abdominal incision is made for some other cause the gall-bladder should usually be examined, unless the incision is a very small one as, for instance, in a simple pelvic or appendiceal operation, or for some of the minor abdominal operations in which there is no suspicion of gall-stones. The word suspicion

in these cases should be used advisedly, for in several cases within the last year, in which gall-stones were found coincident with the gynecological complaint, the most careful clinical history failed to reveal but very little evidence of their presence. If one has actively participated in a very large series of autopsies he learns from practical experience that many women have gall-stones in whom they have never been suspected, and yet many of these very cases have complained greatly from dyspeptic disturbances. The presence of a gall-stone, therefore, even if it has not given rise to pathognomonic symptoms, is a menace to the patient. This fact has been very strongly impressed upon me within the last year by two cases in which severe gall-stone colic developed within a year or a year and a half after abdominal section. In one, the patient had been operated upon by another surgeon twice before: once for the removal of the ovaries for an inflammatory trouble, and the second time for the relief of pelvic adhesions. For some time she was apparently relieved of the pelvic symptoms, but in the meantime had lost flesh and strength, and had suffered from one or two severe gall-stone attacks. After one of these attacks an operation was performed and several stones were removed from the gall-bladder. Subsequent to the operation the patient gradually failed and died six weeks later. The autopsy revealed a large stone which had passed down to a point in the common duct opposite the pancreas, and had then ulcerated its way through the former, and had become imbedded in the pancreatic tissue. The pancreas was hard, dense, and sclerotic, the pancreatic duct having become completely obliterated by the imbedded stone. In this case I am certain that had the gall-bladder been carefully examined at either of the previous operations the stones would have been discovered and the patient's life would have been saved; likewise she would have been spared the last operation.

The second case had been operated upon for a large myoma and had made a satisfactory recovery, but one year after the operation, while away at a summer resort, she was seized with severe gall-stone colic which persisted for two or three days and was followed by intense jaundice. Subsequent to this attack the patient rapidly lost flesh and strength, her temperature was irregular, and there was very slight jaundice. From this time on she had all of the symptoms of a severe cholangitis, from which she died. In this case, likewise, the gall-stones were undoubtedly present at the time of the first operation, but on account of the

serious condition of the patient after the completion of the hysteromyomectomy I purposely omitted the routine examination as we did not dare prolong her stay upon the table.

These cases demonstrate the serious dangers of neglecting to examine the gall-bladder carefully in all patients, when it is possible, in whom celiotomy is performed. In several other cases which have occurred within the last two years this examination has yielded positive results, for a considerable number of stones have been removed coincident with other abdominal operations. The gall-bladder may quickly and most satisfactorily be examined: the gloved hand is insinuated through the abdominal incision, and is gently pushed upwards on top of the omentum with the palmar surface against the ventral wall until the lower border of the liver is reached, when the hand is slid underneath the liver at the hepatic notch and the gall-bladder is grasped gently between the fingers and, in the same way that the pathologist demonstrates at the autopsy the patulosity of the common duct, so here it may be demonstrated by gently squeezing the gall-bladder. If it empties with ease there can be no question as to the absence of any serious obstruction of the cystic or common ducts, either from stricture or from gall-stones. If the gall-bladder is greatly distended and cannot be evacuated by this pressure, even though, as is rarely the case, no gall-stones may be felt, a counter incision should be made over the gall-bladder and the dome of this organ should be lightly pushed up with the abdominal hand into the incision and cholecystotomy performed. In one case of such cystic distention, while it was impossible to say that gall-stones were the obstructing cause, one stone was found and could easily be palpated with the abdominal hand the moment the tension from the accumulated bile was relieved. Although the patient may have no symptoms pointing to the gall-bladder, nevertheless, as was noted above, I look upon it as the better surgical policy to remove these foreign bodies if they are discovered, unless perchance the patient is in such a critical condition from the primary operation that surgical judgment dictates otherwise. It is unnecessary to go into the details of the operation further than to say that my own principles for guidance are first, if upon opening the gall-bladder the stones are easily dislodged and there is no marked visual pathological change in the mucous membrane, this viscus is closed and dropped back into the abdomen without drainage. If there is even a partial stricture of the gall-bladder one of two-

policies is pursued: either the gall-bladder is stitched into the incision and drained or it is amputated down to a point near the common duct. If the mucous membrane is destroyed and the gall-bladder is filled either with clear mucus or pus it is always extirpated.

In twelve cases operated upon in the University Hospital gall-stones were not suspected at the time of the primary operation in more than six of them. In some of the other cases the careful post-operative review of the patient's history revealed certain more or less ill-defined symptoms which had not been elaborated previously, but upon closer questioning were sufficiently pathognomonic to suggest the presence of the stones in addition to the other more evident symptoms which established the positive diagnostic and operative side of the equation. In one or two cases the most careful inquiry failed to elicit symptoms of cholelithiasis. In some of these cases the stones had as yet been innocuous foreign bodies, but how soon symptoms might have arisen no one can say. All of the cases of associated operations recovered satisfactorily.

MOBILITY OF KIDNEY.

There is no subject which has come up within recent years which has been more greatly misjudged than the actual train of symptoms attributable to the lesser degrees of mobility of the kidneys. Just as in the question of the normal position of the large intestine, so with the kidneys, there is no very definite appreciation of what constitutes an abnormal excursus of these organs. In women of tall, slender stature the right kidney can practically always be palpated, for, as I have demonstrated by actual measurements in the living individual, the right kidney has a considerable range of mobility within normal limits. So far as I know there has been no systematic attempt to measure the actual play of the kidney in the living individual, all previous data having been drawn from studies upon the cadaver either in the anatomical or pathological departments. The study of this question upon the cadaver after it is prepared for the dissecting room is worthless, and this is to a considerable extent true of the investigations made upon the rigid subject at autopsy. For several years I have felt that there was no operation which gave such unsatisfactory results as the various methods of suspending the kidney. This remark is not intended as a criticism of operative methods, but of operative judgment, for in cases in

which there are well defined symptoms, such as the classical Dietel's crises, I know of no operation which gives quicker and more permanent relief than nephrorrhaphy. It is to the neurasthenic cases with ill-defined dyspeptic symptoms, general backache, headache, etc., to which I especially allude. The movable kidney enthusiast is very likely to discover a slight excursus of the right kidney which he at once looks upon as the source of all evils and promptly operates upon one or both kidneys. Such cases, are rarely benefited, on the contrary are frequently worse and, therefore, I have instituted the plan which I shall describe, more for statistical study than its actual value in determining whether or not to operate upon the movable kidney as a coincident part of an abdominal operation. At the completion of the pelvic operation the following method is carried out in measuring the actual mobility of the kidneys: The hand is inserted underneath the omentum and gently pushed upward along the outer side of the ascending colon, with the palmar surface down, until the lower pole of the kidney is encountered. The fingers are then slipped up over the kidney until they rest upon a point just beyond the hilus. The abdominal incision represents a fixed point, and therefore serves as the standard from which the range of mobility may be determined. With a metal rule the assistant measures the range of mobility as indicated by the arm as it glides out of the incision while the kidney is gently being drawn downwards. When the kidney ceases to move it is released and if it promptly glides back into its former position I look upon its excursus as normal, except when the symptoms have unquestionably pointed to this locality as the seat of trouble. The mobility of the left kidney is measured in the same way. As the result of these systematic measurements we find that in health there is a marked difference in the range of mobility between the left and right kidney. The greatest range of mobility in the series of 42 cases without symptoms was 6 cm. for the right and 5.8 cm. for the left kidney. The average mobility of all the cases without symptoms was 2.49 cm. for the right and 2.01 cm. for the left kidney. Unless the right kidney may easily be drawn downwards and tends to remain where placed without springing back into its former situation I consider it normal. These measurements have sustained my previous impression, that many cases of so-called movable kidney which are subjected to nephrorrhaphy are not producing symptoms and therefore the operation is unjustifiable. As I shall say in my subsequent remarks upon

gastroptosis I believe that in many of these cases having dyspeptic and neurasthenic symptoms general enteroptosis is provocative of the ill health of the patient rather than the so-called movable kidney. If, therefore, I should summarize the results of my study in these cases I would say:

First, that a range of mobility up to 6 cm. for the right and 5 cm. for the left kidney may be essentially normal and give rise to no symptoms.

Second, if this range of mobility is accepted as normal, the natural conclusion is that many ill-defined cases of neurasthenia and dyspepsia are being unjustifiably subjected to nephrorrhaphy.

While, therefore, my studies have led me to decide in favor of the removal of the appendix as a coincident part of another abdominal operation, and likewise in the event of gall-stones being found that they should be removed, I am quite as positive that the mere finding of an undue mobility of the kidney is never an indication for operation, unless unquestionable symptoms point directly to it. In other words, vague neurasthenic or dyspeptic symptoms are never indications for nephrorrhaphy.

GASTROPTOSIS.

Without doubt many of the cases which hitherto have been ascribed to reflex causes or of later time to movable kidneys are directly the results of ptosis of the abdominal viscera. During the last two years this subject has received widespread attention among abdominal surgeons, and several operations have been devised for lifting up and holding in place this partial prolapsus of the abdominal organs. While constipation has been looked upon in the past as an ailment especially prevalent among women, the tendency has been to attribute it merely to functional disturbances of the large intestine rather than to mechanical disabilities. The more these cases are studied the more one is convinced that Glénard made a most important discovery when he called the attention of the medical world to enteroptosis, to which he ascribed a special group of symptoms, such as nervous dyspepsia, neurasthenia, and obstinate constipation. He laid particular stress upon the part played by the descensus of the transverse colon, and claimed that he was able to feel the colon at a point considerably below its normal position. Ewald took exception to Glénard's statement relative to the palpation of the prolapsed transverse colon and states that it is the pancreas which is usually felt. According to Glénard the kink in the colon gives

rise to the constipation, while the descensus of the stomach and intestine are the promoters of dyspeptic disturbances. Since Glénard published his paper an infinite amount of anatomical research and many careful clinical observations have been made relative to this disease, and both the medical and surgical world have put forth every effort to correct both by surgical and medical means these dislocations which so greatly incapacitate the patients, and keep them semi-invalids throughout their lives.

In exaggerated cases of enteroptosis the symptoms are so well defined that a diagnosis may unhesitatingly be made without resort to an abdominal incision. But as in the foregoing conditions which I have discussed, so here my paper does not deal with clinically well-defined cases but with the vaguer ones in which positive symptoms of some pelvic lesion indicates the operation, and the gastropotosis is merely met with as a coincident condition which may or may not be dealt with. In these vague cases the diagnosis previous to the incision is, at best, tentative. What rule is to guide us in determining the lesser degrees of malposition after the abdominal incision is made? Upon opening the abdomen my first rule is to lightly catch the omentum with blunt dressing forceps and pull it out of the incision. If the transverse colon is found resting below the umbilicus there is unquestionably an abnormal descensus of this organ, for the normal colon should occupy a transverse position above the umbilicus. Such a degree of malposition, however, as this in my opinion has little or no clinical significance so far as operative measures are concerned. If, however, the colon can easily be pulled out through the incision below the umbilicus and a more exaggerated descensus fully demonstrated then operative measures may be considered for restoration to its normal position. When upon opening the incision, especially if the patient is in a moderate degree of Trendelenberg elevation, the colon is found as low as the pelvic brim, there is no question but that the enteroptosis is exaggerated.

Having settled this question the next part of the colon which should be given attention is the sigmoid flexure. In several textbooks as well as original articles the sigmoid flexure has been shown as greatly duplicated upon itself and has been called a redundant sigmoid. This, I believe, is a misnomer. Such a malformation is not, in my opinion, a redundant sigmoid but is a more or less complete ptosis of the descending colon. The sigmoid, acting as a receptacle for fecal matter, when it becomes greatly over-loaded naturally makes undue traction not only upon

its own mesentery but likewise upon the descending colon, which may or may not have a mesentery. The traction naturally tends to pull this organ down into the pelvis and causes a duplication of its folds. In many instances the sigmoid alone is the only part of the intestinal tract which has undergone this descensus, and this, I believe, gives rise to a more or less characteristic symptom in the left ovarian region. Many cases of so-called ovarian disease in which the pain, though localized to the left side, is not sharply defined but may be localized within an area as large as the hand just above the brim of the pelvis is, in my opinion, due to the tension of the tightly drawn mesentery over the brim of the pelvis as well as to the greater congestion of the mesenteric and ovarian veins. In my study of these cases I have endeavored to isolate a set of symptoms which may be differentially diagnostic of this special dislocation, but as yet I do not believe it can be accurately determined. For several years I have noted a set of cases in which the patient persistently complains of pain not in the ovarian region but just above it. This has in the past been attributed to some lesion of the ovary or tube, and operations for the removal of the ovary, for the correction of a malposition of the uterus, and other operations have been performed, but subsequently the patient has continued to complain of the same persistent pain in the left side. These cases have occurred with sufficient frequency to call my attention especially to them, and for several years I have felt that there was some other basis for these complaints than the usually ascribed pelvic ailments. From the anatomical standpoint there are but two conditions to which these fixed pains on the left side can be ascribed: either to the sigmoid flexure or to the difference in the venous circulation on this side. Varicose veins would naturally give rise to a dull aching pain on the left side, similar to that seen in the varicocele of man. I have not, however, attributed these peculiar symptoms to this source, for varicosities of the veins are comparatively infrequently found. I therefore believe the cause lies in the sigmoid flexure for after the correction of a markedly prolapsed sigmoid I have seen the symptoms disappear. While the diagnosis of this condition cannot accurately be made before the celiotomy, after the incision is made the prolapsed sigmoid may be diagnosed in the same way as the descensus of the transverse colon. To accomplish this the colon with the omentum should be pushed well back into the abdominal cavity, with the patient in the Trendelenberg posture, and the small intestine likewise dropped back out

of the way. The sigmoid should then be gently pulled up out of the incision. Concerning the question of redundancy or prolapsus, as yet no well defined rule may be given for there is unquestionably a considerable variation in the mobility as well as the length of the normal sigmoid within the bounds of health. My own rule is to consider the sigmoid abnormal when, on catching its midportion at least 9 to 12 inches may be drawn out of the incision. In such a case as this upon dropping the sigmoid back into the pelvis, even though it is completely emptied, it will fall into one or two folds which produce considerable kinking of the bowel with more or less obstruction. The greater the bowel becomes overloaded the greater the difficulty of its evacuation. When this dislocation is exaggerated, no woman can be well without its correction.

I have devised an operation for the suspension of the sigmoid which I have applied in a small number of cases, in some of which good results have been obtained. Nevertheless, I speak of this operation with some reluctance, *for I am certain that it is a procedure which should not generally be instituted, and I only suggest it for exaggerated cases.* In permanently replacing the sigmoid the only available means of suspension is its own mesentery; the greatest care, therefore, should be observed not to injure or kink any of its terminal vessels, for in this event localized gangrene of the sigmoid would take place. Ten or twelve cases have been operated upon thus far without any complications, and some of these cases have been so much relieved that I venture the hope at least that the operation may have a limited field of usefulness. The operation is performed as follows: the redundant loop of sigmoid is drawn well out of the abdominal incision, the incision first having been extended as high as the umbilicus. The mesentery is spread out fan-like, and held up against the light so that its vessels may easily be seen. Usually three or four points are selected for the suspension stitches. Fine silk sutures are used. The ligature is passed through the mesentery and back again between the loops of blood vessels with a curved needle; all of the suspension sutures are first inserted, after which the sigmoid is pushed back into the abdominal cavity and a comfortable site above the brim of the pelvis in the loin is selected for the attachment of the suspensory sutures. The anterior abdominal wall is well lifted up by the broad retractors and one suture after the other is placed at sufficient distances apart so that the sigmoid may not be artificially kinked or the mesenteric vessels ob-

structed. In this way the redundant portion of the sigmoid may be well drawn up out of the pelvis and held in a better position than its dislocated one. The bowel under these circumstances hangs free and its peristalsis is in no way interfered with.

If there is exaggerated ptosis of the transverse colon I usually make a counter incision above the umbilicus and draw the colon up by means of the gastro-colonic omentum and place a row of sutures through this omentum, which are attached to the anterior abdominal wall, thus taking the weight of the transverse colon off the stomach and at the same time forming a hammock-like support for the stomach itself. This operation was first described by Coffee, of Portland. My experience thus far with the operation seems to indicate that it also has a field of usefulness.

In many cases of enteroptosis in which there is a diastasis of the recti muscles, I have employed with the greatest success Webster's operation for correcting this defect in the anterior abdominal wall. The point, therefore, which I would especially bring out relative to gastroptosis is that in the event of the transverse colon being in exaggerated descensus or prolapsus it should be drawn upwards to the normal position and held by transversely placed sutures through the gastro-colonic omentum. If the sigmoid flexure is so greatly redundant or prolapsed that it forms an exaggerated malposition in the pelvis it should be drawn up to more nearly a normal position and fixed by the plan which I have suggested. As in every new surgical procedure, whose field of usefulness is not well defined, it is likely to be much more frequently employed than is justifiable. My chief warning, therefore, is against the institution of this latter operation except in the worst cases, for as yet I cannot earnestly speak in its behalf, and therefore harm rather than good may be done unless it is most judiciously performed.

Before concluding this article the general contra-indications to the employment of the so-called cyclical examination of the abdomen as a coincident part of an abdominal operation should be pointed out. *Manifestly, when the operation in the pelvis has been attended with the evacuation of pus, which if generally distributed in the peritoneal cavity might give rise to a peritonitis, this exploration should be omitted. In cases which are in a critical condition at the termination of the operation it should not be made. In cases which are operated upon for a simple condition when the clinical symptoms are clear cut and point definitely to but the one condition it should again be omitted.* More elabor-

ate details concerning contra-indications might be considered, but this is unnecessary, for good surgical judgment will invariably point out the cases in which this procedure is contra-indicated.

In the fore-going topics I have endeavored to take up only those problems which, in my own experience, are not as yet settled. If, therefore, I were to point out in conclusion the questions which I hope may be discussed, they are as follows:

First.—Should the normal appendix be removed as a coincident part of all pelvic operations?

Second.—Should gall-stones, if discovered in the course of another operation, be removed?

Third.—If the right kidney has a range of mobility from 2 to 6 cm., under which circumstances most of them may easily be palpated, what set of symptoms are sufficiently pathognomonic of a pathological mobility to indicate nephrorrhaphy?

Fourth.—What degree of descensus of the stomach and transverse colon require operative measures for their restoration?

Fifth.—Is there a group of symptoms significant of sigmoid-tosis?

Sixth.—In these cases should sigmoidopexy be performed?¹

While my own conclusions are not as yet well defined upon all of these topics I should say from my personal experience thus far I would answer these queries as follows:

First.—With intelligent patients the question of whether or not the appendix is to be removed should be left to their decision. In the less intelligent class, where the surgeon's judgment must be the guide, I believe the best interests of the patient will be subserved by the removal of the appendix.

Second.—In every case, unless the patient's condition is a contra-indication to any further operation, gall-stones, even though they have not produced symptoms, should be removed.

Third.—Only in instances when the symptoms very directly point to pathological mobility of the kidney should this organ be suspended as a coincident part of another operation. In my experience the percentage of these cases is not more than one in one hundred and fifty cases.

Fourth.—If the transverse colon is situated at the brim of the pelvis and the lower curvature of the stomach is below the umbilicus, this organ should be replaced and held in position by

¹As these questions are all more or less unsettled, I hope to elaborate each one as a special topic in subsequent papers.

stitching the gastro-colonic omentum in a transverse line across the upper portion of the abdomen.

Fifth.—As to the question of there being a group of symptoms significant of sigmoiditis, I am as yet in doubt, but I believe that the cases of fixed aching pain at the brim of the pelvis associated with obstinate constipation in the absence of pelvic lesion, are strongly significant of this condition.

Sixth.—Although as yet a novel procedure, sigmoidopexy if only performed in the more exaggerated cases, may offer a hope of correcting this dislocation and relieving symptoms.

218 SOUTH 15TH STREET.

THE THERAPEUTIC VALUE OF ASEPTIC ERGOT IN ANESTHESIA AND SHOCK.¹

BY

H. GRAD, M.D.,
New York.

SINCE the discovery of anesthesia in 1848, it has been the means of saving lives in countless numbers. While nothing can possibly dim the lustre of this star in the firmament of the science of medicine, yet in individual cases how often does anesthesia mar an otherwise successful issue of the case? To speak of only one of the after effects of anesthesia: it causes vomiting at times to such a degree as to enhance profound systemic disturbance which may result fatally, to say nothing of causing extreme distress and suffering extending over a period of days. No wonder then that bright minds of medicine have persistently endeavored to get at the etiological factors of the vomiting following anesthesia and if possible to find some means to overcome it. It is a most distressing sight to see a patient who has successfully passed through a perhaps complicated operation continually harassed by persistent nausea and retching, and have nothing at hand to give the much needed relief. In some of these cases, if we are unable to stem the tide of the nervous storm, it may mean the failure of our best endeavors. Much can be done in these cases with sedatives administered judiciously, but with some constitutions these very sedatives themselves cause nausea at a later hour.

¹Read before the Woman's Hospital Society, Feb. 24, 1904.

Many theories have been advanced to account for the phenomena of vomiting following anesthesia. Some believe that the vomiting is a characteristic physiological action of the drug, and the only escape from this disagreeable after effect of anesthesia is to obtain the drug in a pure state, and use as little of it in each case as possible. Others maintain that the vomiting is caused by the presence of a quantity of mucus in the stomach, swallowed during the primary stage of the anesthesia. Still others believe that the drug circulating in the blood affects the vomiting centre in the medulla. Probably many factors are at play in causing the nausea and vomiting following anesthesia. It is, indeed, plausible that the irritation to which the vomiting centre in the medulla is subjected by the presence of the drug in the blood is no trifling factor in the etiology. Coupled with this irritation of the centre, the presence of a quantity of mucus in the stomach, and we have a combination of factors well calculated to bring about nausea and vomiting. It is no valid argument to say that not every anesthesia is followed by nausea and vomiting and, therefore, the factors cannot be etiological, because the physiological effect of any drug is not the same in all patients and not always the same in the same patient. The late Dr. Ralph J. Hess (*Med. Record*, Feb. 22, 1902), in a notable paper on the subject, expressed the theory that the nausea and vomiting following anesthesia may be due to an excretion of ether by the cells of the mucous membranes, the drug in the stomach acts as an irritant, causing the phenomena of gastric irritation. Some of his experiments led him to such a view. He says: "Acting on this theory that ether is excreted into the stomach, I have endeavored to find a treatment which would do three things—accelerate the excretion of ether, prevent its irritant action in the stomach and reduce the quantity of ether used to a minimum. The excretion of ether is facilitated by saturation of the patient with water. Such a saturation obtained by giving water freely up to the very minute anesthesia is begun gives the kidneys, lungs, stomach, mucous membrane and skin a chance to excrete ether rapidly. Preventing the irritant effect of ether on the stomach requires simply the dilution of the ether as it is excreted. A glass or so of water taken at the commencement of anesthesia serves to hold in solution considerable ether (ether being soluble in water in the proportion of 1-10)."

It is of great importance to diminish the amount of ether used as much as possible. This is, no doubt, best accomplished by bringing about anesthesia with nitrous oxide and using a closed

inhaler during the subsequent anesthesia. The objection to a closed inhaler has always been that the patient is inhaling expired air. This is true only to a very small extent, and the small quantity of expired air the patient does reinhale can in no way be harmful. With an open inhaler the patient receives the ether in quantities that are entirely superfluous, the blood becoming supersaturated with the drug far beyond what is necessary for successful anesthesia. With an open inhaler, when a quantity of ether is poured on, the patient receives first an overwhelming quantity of the anesthetic and with each breath the ether is more and more diluted until the dilution reaches the maximum. With a closed inhaler, the quantity of ether administered can be gauged to a nicety, and the patient receives with each breath just enough ether to keep up a state of anesthesia. The sudden supersaturation of the blood is thus avoided, and the patient receives a minimum amount of ether.

In this connection, Dr. Hess calls attention to a very important point, and he expresses himself as follows: "The question of preventing an excess of secretion of mucus in the larynx and bronchi is important in this connection. Such mucus, if excessive, is swallowed and adds to the gastric irritability. The cause is too strong ether vapor. Ether vapor concentrated enough to cause spasm of the glottis, gagging and resistance of the patient is also strong enough to cause irritation of the respiratory mucous membrane with excess of mucus." To avoid this excessive mucous secretion, the anesthetist should administer the ether sparingly, gradually increasing the quantity to the desired amount.

With these preliminary remarks, I shall at once pass to the object of my paper; this being to bring before you a therapeutic measure for the prevention of nausea, retching and vomiting following anesthesia. This therapeutic measure has proven encouragingly successful at my hands, and is submitted to you in the hope that you will give the measure a fair test and assist in the matter of determining its real therapeutic value. My experience with this measure has been limited, but so uniform has been the result obtained, that I take the liberty in asking you to give the measure a more extensive trial.

This proposed therapeutic measure consists in administering aseptic ergot hypodermically during and after each anesthesia. In my cases, where this drug was tried, it was surprising what measure of relief was given to the patient by the administration of a few doses of ergot. My attention was called to the applica-

tion of ergot hypodermically by reading a paper of Dr. A. T. Livingston, "Some new and unusual therapeutic applications of ergot (*Jour. of Am. Med. Asso.*, March 21, 1903). In this paper, the doctor reports very striking results obtained from the use of ergot and had determined to give the measure a trial. A few days later an opportunity presented itself in the following interesting case. I was asked to see a young woman who was suffering with what I called hystero-epilepsy for the want of a better term. This patient had violent muscular contractions in almost every skeletal muscle of her body. It was a most distressing sight to see those frantic contortions of her body, the patient all the while shrieking with pain. Her agony must have been extreme. The history was that the patient had nursed a very trying case and this nervous storm had been brewing some days. For nights the patient had not been able to sleep, her exhaustion and fatigue having become extreme. A hypodermic of $\frac{1}{4}$ grain of morphine was accordingly administered to give relief. After waiting thirty minutes at her bedside, not the slightest relief was noticed by the patient, nor did the painful muscular contraction abate in the least. A second $\frac{1}{4}$ of a grain was then administered, but it also gave no relief. Although the physiological effect of the administered morphine was plainly visible, shown by the pupillary contraction, the excited state of her muscles did not diminish. Chloroform anesthesia now suggested itself when aseptic ergot was thought of. Two hours were spent in procuring the article, during which time the frightful agony of the patient continued. The aseptic ergot having been administered, I sat down to await results. In fifteen minutes, the frequency of the muscular contraction diminished, and in five more they had entirely ceased. The patient gave a sigh of relief, and the storm was over. Two days later, the patient found herself again in the same critical state. It took four hours before I could get to her bedside when a hypodermic of ergot brought the same prompt relief as the previous one.

This experience aroused my interest in the paper referred to, and on careful perusal I came across the following paragraph which I shall take the liberty of quoting in full: "It is no disparagement to modern surgery to recall that before the day of antiseptics, the surgeon was not always defeated; that, indeed, his victories were counted by the thousand, and why? We surely cannot assume that the bacterium did not then exist, any more than we can assume that the mass of mankind who do not

develop tuberculosis are never exposed to its bacterium. There was in those successful cases a condition that prevented the fatal activity of the bacteria. I believe that the explanation is to be found in the state of the circulation. Inflammation can only follow congestion, and congestion can only occur when the walls of the blood vessels in the injured or wounded part have not sufficient tone. Where there is not that sufficient tone, ergot will develop it, and this is the function and province of ergot in surgery. In all cases where there are time and opportunity to prepare the patient for operation by a preliminary course of ergot, it should be done as carefully and conscientiously as one would to secure a perfect antiseptic during and following the operation. When the subject cannot be so prepared in advance, the administration of ergot should be made hypodermically before and during anesthesia and operation, and afterward until the healing is completed. A patient who has had a proper preliminary preparation by ergot for operation will have little or none of those distressing and often seriously objectionable accompaniments and sequelæ of anesthesia, nausea, retching, vomiting and delirium, and fluid nutriment may be safely given, as a rule, within a few hours after operation."

Acting on this suggestion of the author, I am now able to report five cases where I have used aseptic ergot to combat the nausea and vomiting following anesthesia. Case 1: Mrs. A., aged 32, had been confined to her bed for four weeks with pelvic disease. To clear up the diagnosis, an ether examination was requested. The patient consenting, she was placed under chloroform. Anesthesia was obtained promptly and continued for a very short period, less than twenty minutes. This short anesthesia was followed by most distressing nausea and vomiting, accompanied by violent headache. When I saw the patient six hours later, the nurse reported that the patient had vomited four times quantities of bile stained material, and was harassed with persistent retching. A hypodermic of ergot was administered with the most magic result. The retching ceased, the nausea disappeared and the headache diminished greatly in its severity, and within two hours the patient was able to take a small quantity of nourishment. Five days later, the same patient was laparotomized and a double salpingectomy performed. On account of the extensive adhesions and the large raw surface in the pelvis after the removal of the pus appendages, posterior drainage was inserted. The operation was one of moderate severity, shown by the pres-

ence of considerable shock. In a case of this kind, we would expect nausea and vomiting in a moderate if not in a considerable degree. The patient having received ergot before, during and immediately following the operation, it was agreeably surprising to me how little the patient suffered after the operation. In view of the fact that without ergot, this patient suffered much following the short anesthesia, and comparatively little following a rather prolonged operation, I felt justified in drawing the conclusion that in this patient at least the ergot had a decided beneficial action in ameliorating the distress from nausea and vomiting. In this case, the nurse was instructed to make careful notes of the condition of the patient as far as nausea, retching and vomiting were concerned. In looking over these notes, it will be seen that the patient had vomited four times during the ten hours following the operation, but the nausea complained of was slight and the retching entirely absent. It seems that when the stomach becomes irritated to a certain stage, it contracts and gets rid of its contents. This vomiting is followed by relief and may not return for hours. The patient in the meantime is calm and restful, and may even enjoy some sleep. What a contrast is this picture of the condition of the patient with that of another where there is continual retching, the patient moans and groans, with the torments of nausea.

Aseptic ergot hypodermically does not prevent vomiting following anesthesia, and no such claim can be made for it, but what it does do is this—it mitigates the feeling of nausea, controls the retching and diminishes the frequency of the acts of vomiting. Freeing the patient from all these baneful sequelæ of anesthesia, means that the patient is placed in a state of nerve calmness which must necessarily react most favorably on the recuperative powers. Were ergot to do no more than this, it would deserve a place in the armamentarium of the surgeon, but its administration accomplishes still more. Next to a hypodermic of morphine, it is the most powerful anodyne. When the pain incident to the operation becomes unbearable, a hypo of ergot will bring the patient the much desired relief. Ergot does not relieve pain with as much certainty as a hypo of morphine and, therefore, in those cases where the ergot does not bring relief and morphine is called for, it will be found that under these conditions, the action of the morphine is much augmented by the ergot and the anodyne effect of these combined drugs is more pleasing to the patient and more lasting in its effects. But more than this can

be said in favor of ergot in surgery. It not alone brings about a state of nerve calmness, but acts beneficially on shock. Whether this beneficial effect on shock is an indirect one, by removing nausea, retching and relieving pain, or whether the therapeutic effect is due to having brought about a state of equilibrium in the circulation in the brain and thereby exerting a calming influence directly on the cells of the central nervous system, I cannot tell, but I have reason to believe that the latter is the case. The physiological effect of ergot is to cause contraction of involuntary muscles. By doing this, it will bring about equilibrium in the circulation of a part of the seat of congestion. In this congested area or organ, the blood vessels are dilated, the nerve endings are pressed by these vessels, a condition ripe for exudation and inflammation. Ergot brings about a change by contracting the muscle fibres of the arterioles, equilibrium in the circulation is thus established, congestion is overcome, exudation prevented and pain relieved by removing pressure from the nerve endings. In the laparotomy cases where ergot has been used, I have observed that the bowels have been made to move more easily than is usual with these cases. I cannot say that this very desirable condition was due to the ergot administered or merely a coincidence, but so striking has this effect been that I make mention of it. In the laparotomy case reported above, the bowels moved during the second day without any cathartic, and in still another case a patient given to constipation, the bowels have been made to move two days after laparotomy with the aid of a grain of calomel given in four doses. Many laparotomy cases, of course, have bowel movements without the aid of cathartics, but in the majority of cases it takes considerable medication to bring about this result. It is, therefore, difficult to draw conclusion in this matter, but with due allowance given to all questions on the subject, it seems to me that the free use of ergot in laparotomy cases enhances bowel movements. And in these cases less difficulty will be experienced in obtaining a movement when cathartics are called for. Nor can I help being impressed with the therapeutic value of ergot in the shock concomitant of abdominal sections. Shock is a state of depression of all vital functions, but particularly that of the circulation, hence the facial pallor, the cold extremities, the feeble heart action. An excessive irritation of the peripheral nerves brings about changes in the function of the central nervous system, particularly that part which presides over the vaso-motor system, the seat of which is in the medulla. Excessive peripheral irritation

brings about in the medulla a condition of nerve exhaustion which may gradually merge into a state of paralysis. Ergot exerts its influence in these cases by equalizing the disturbed circulation in the medulla.

The following case will illustrate the therapeutic value of ergot in nausea: Case 2—Mrs. T., aged 43, had been subjected to abdominal section two years ago. A double salpingectomy was performed under unusual difficulties, as the bowel adhesions were most extensive. The patient suffered great shock and it took many weeks for her to recuperate, finally, however, making a complete recovery. From the history of the case, it was quite evident that the infection was of gonorrhea origin. I mention this, as it bears on the subsequent history of the case. On June 6th, 1903, the patient was taken with a very severe pain in the abdomen, accompanied with nausea and vomiting. A hypodermic of one-quarter grain of morphine brought some relief from the pain. Within a few hours, the pain localized over the left hypochondriac region and an examination at this time revealed an enlarged and excessively tender left kidney. The temperature rose to 104 and the patient presented a picture of being very ill, complaining bitterly of nausea; the nausea and retching being most distressing. A diagnosis of pyonephrosis was made and the case treated expectantly. In a few days the pain subsided, the temperature diminished, pus appeared in the urine, and all the acute symptoms seemed to subside, the nausea, however, remaining, causing great distress and suffering. The patient being unable to take any nourishment, various foods and medications were resorted to to overcome the nausea and vomiting, but with little or no result. The vomiting was as persistent as in intestinal obstruction or peritonitis. None of these conditions existed, however, as bowel movements could easily be obtained. Indeed, so alarming was the condition of the patient, the result of the vomiting, that had she had no prompt relief, surgical intervention would have been necessary, and the outcome of such procedure would have been doubtful, considering her feeble condition.

The question arose as to the cause of this persistent vomiting and intolerable nausea. After due consideration, I concluded that the cause might be toxic in nature—toxic material being absorbed from the pus kidney, which, circulating in the blood, acts on the central nervous system, affecting the vomiting centre in the medulla. Acting on this theory, a hypodermic of aseptic ergot was administered to equalize any disturbance in the circulation

that might exist in the medulla and central nervous system. The result of this hypo was indeed surprising. In twenty minutes time, the nausea had greatly abated and by administering ergot every ten hours, no further vomiting had occurred, although during the course of her illness, most stormy rises of temperature and return of acute symptoms had occurred. She was kept under the influence of ergot for six days, and after that an occasional dose of ergot would rid the patient of nausea.

I fully realize how difficult it is to draw conclusions about therapeutic values of drugs, but in the cases reported, the results have been so striking that I could not help being impressed, and I believe the measure is worthy of consideration and trial.

It may not be amiss to refreshen your memory in regard to this drug. Ergot is not a true vegetable, but belongs to the so-called fungi. This fungus infests barley, wheat and oats, but the ergot of rye is the one used for official preparations. It has also been found that the Spanish ergot of rye is superior in activity and reliable firms always use it in making their preparations. Ergot is a blackish body, irregular in outline, consisting of microscopic cells surrounded with a thick wall. It contains an oily substance, but no starch. The earlier preparations of this drug were very unreliable, as the strength and efficiency of the preparations varied greatly.

In 1857, Professor W. Proctor discovered that by adding acetic acid, reliable preparations could be obtained as the acetic acid fixed the alkaloids and rendered them stable. Ergot is chemically a very complex body and its physiological effects are not due to any one of its constituents. No active principle has been found in the drug, and the whole of the ergot must be used to obtain its therapeutic effect. For internal medication, the fluid extract serves well, but for hypodermic use the solid extract dissolved in sterilized water is the safest preparation. This preparation causes little or no pain, providing the needle is introduced into the muscular tissue. I have used two preparations, both giving good results. The solid extract can be obtained put up in sterilized capsules, which can be dissolved in sterilized water, each minim of the solution representing one grain of ergot. I have used the fluid preparation on the market put up in tiny glass bottles. They are very convenient to handle and always ready for use. These tubes are sealed and remain sterile indefinitely.

My method of administering ergot in laparotomy cases has been to give the patient ten grains hypodermically as soon as anes-

thesia has been fully established, and a second dose when the patient leaves the operating table. If the operation is a lengthy one, a hypo is given during the operation. If the nausea is excessive, another dose is given in two hours. If the nausea is moderate, the dose is only repeated after three hours. If shock is marked, the dose should be repeated every hour if necessary. Should the ergot not control the pain sufficiently, an eighth of a grain of morphine is given. This small dose of morphine usually has the desired effect, acting much more favorably, and its effect is more lasting than without the ergot.

In conclusion, I would say that without appearing too enthusiastic about ergot in nausea and shock, I feel that the subject deserves attention, and although the therapeutic action of ergot may not be prompt in all cases and under all conditions, yet in a very large number of cases, it would be of great value in combating nausea and shock.

115 EAST 116TH STREET.

POSTERIOR INTRODUCTION OF THE FORCEPS.¹

BY

GEORGE L. BRODHEAD, M.D.,
New York.

THIS ingenious and valuable method of introducing the blades of the obstetric forceps was devised and perfected by the late Dr. E. A. Tucker, whose great skill in obstetrical technique, and more especially in the forceps operation, was well known to you all. To the best of Dr. Tucker's knowledge and belief, the method was original; and while he taught the operation at the Sloane Maternity Hospital, he had not written a description of it. The method was used by him frequently; and so valuable did he consider it, that at the time of his death he was about to write an exhaustive treatise upon it.

The posterior introduction of the blades may be used as a routine procedure, taking the place of the usual lateral introduction of the forceps; or it may be held in reserve for those cases in which it is difficult or even impossible to introduce the blades by the ordinary method. The technique is especially applicable to cases in which the head is at or above the brim of the pelvis; for

¹Read before the Hospital Graduates Club, March 24, 1904.

it is in these cases that the lateral introduction is often difficult. When the left blade of the forceps occupies the vagina, it is usually more or less difficult to adjust the right; and where damage has been done in the introduction of the forceps blades, it is usually found that the right side of the vagina has suffered to the greater extent, owing to the difficulty in introducing the right blade. One of the great advantages of the posterior method lies in the fact that after the left blade has been passed up within the cervix the right blade must necessarily enter the uterus, for the reason that the left blade acts as a guide for the right; and consequently the difficulty of introducing the right blade within the cervix is obviated.

The solid bladed forceps is especially useful in the technique under consideration, although the fenestrated instrument can be used. The patient is prepared for the forceps operation in the usual way. The bladder and rectum having been emptied, the cervix dilated as fully as possible, the membranes ruptured, and the diagnosis of position having been satisfactorily determined, the fingers of the left hand are passed up into the vagina, until the cervix is felt. The handle of the left blade is then seized by the right hand of the operator, and the blade is introduced along the fingers of the left hand to, then into, the cervix; after which it is carried upward and to the left, between the head and the lower uterine segment; the lower portion of the blade lying just anterior to the left sacro-iliac synchondrosis. The left blade being held as a guide, the right blade is then carried up into the uterus, the convex outer surface of the right blade gliding along the concave inner surface of the left blade. And then as the tip of the blade approaches the sacral promontory, it is guided upward and to the right, the lower portion of the blade resting in front of the right sacro-iliac synchondrosis. The concave surfaces of the blades now look directly anteriorly—the left to the left side of the promontory, and the right to the opposite side. If the occipito-frontal diameter of the head lies in the transverse or conjugate diameter of the pelvis, the blades are applied over the face and occiput, or over the sides of the head, as the case may be, by seizing the handles of the blades, one in each hand, and rotating each outward through an arc of ninety degrees. To do this the more easily, the handles are first depressed, in order to give greater freedom for the rotation of the blades.

If the occipito-frontal diameter of the head lies in one of the oblique diameters of the pelvis, the handles are rotated in such a

way as to bring the blades to the sides of the head; after which they are locked. In an L. O. A. position, for instance, the left blade is practically in position on the left side of the head; hence the right blade is rotated forward until it rests on the right side of the head. In many instances the introduction is very easy; and in some cases the procedure can be used where the usual lateral introduction fails. For example—suppose that the left blade has been introduced in the usual manner and for some reason the right blade cannot be inserted into the uterus. The left blade is rotated posteriorly in such a way that it rests to the left of the promontory. The right blade is then introduced on the left as a guide; and the introduction is usually accomplished with no special difficulty. When properly used the method is free from danger, and it will be found in the future, as it has been in the past, a valuable aid in forceps technique.

110 WEST 57TH STREET.

IODIZED CATGUT.¹

BY

CHARLES S. WHITE, M.D.,
Washington, D. C.

To Sir Astley Cooper belongs the credit of introducing catgut as a suture material, but this eminent surgeon was embarrassed by suppuration following its use, and abandoned it. For the Lister school it remained to recognize wherein the fault lay, to correct it, and place it upon a firm footing, giving us our ideal suture. Even at the present time we sometimes question the innocence of the catgut ligature and, justly or unjustly, it is blamed for hemorrhage and infected wounds, while frequently, on the other hand, its physical prestige is sacrificed at the altar of sterilization.

There are at present in general use, two chief methods for sterilization of catgut, one by boiling in alcohol, and the other by boiling in cumol, both yielding good products, but entailing hours of patient work, not free from danger. That chemical disinfection has not proved successful is shown by the various methods which have been advocated, but most of which have been unable

¹Read before the Washington Obstetrical and Gynecological Society Jan. 5, 1904.

to stand the test of surgical experience. Chemicals fail in that they do not penetrate the ligature, but simply inclose the catgut, perhaps infected, in an antiseptic film, which, when absorbed, leaves the pathogenic organism an unlimited field for activity. A bacteriologic test of this catgut in the usual media is fruitless and fallacious, as the germicide is present in sufficient amount to inhibit growth. The culture tube test, as generally applied, is not analogous to the surgical ordeal, and as a matter of fact, we can not, by artificial means, duplicate the susceptibility, lowered vitality, lessened resistance, idiosyncrasy and other states of the human body which modify the action of catgut and invite sepsis.

Dr. Nicholas Senn has recently called attention to the Claudins process of preparing catgut, which has been used by some German surgeons, and in his own work, with brilliant results. The disinfecting agent is iodine in one per cent. strength. In iodine we have an antiseptic and germicide which, though of recognized merit, is too seldom employed. It has the power to penetrate tissues, is highly detergent and non-toxic. The solution Senn advises is iodine one part, iodide of potassium sufficient quantity to saturate, and distilled water sufficient to make one hundred parts. With a view of estimating the antiseptic point of iodine in this formula, I have made a number of tests and observed the following: In strength of iodine 1 to 1,100 in bouillon, no growth of streptococcus pyogenes occurs. Staphylococcus albus will not grow in strength of 1 to 5,000. The Colon bacillus is inhibited in 1, to 2,500 dilution. In all the experiments controls were used and the tests verified by repetition. Koch states that the anthrax bacillus is destroyed in 24 hours by a 1 to 5,000 solution of iodine.

To ascertain the efficiency of this solution in disinfecting suture material a piece of catgut about three feet long was wound upon a glass rod, immersed in a bouillon on culture of streptococcus, allowed to remain two days or longer, transferred to the iodine solution for eight days, placed in sterile water two days to remove the excess of chemicals, then put into another bath of sterile water for two days and lastly placed in bouillon. There appeared no growth after sixty-two hours in the culture medium. The catgut was then removed and the bouillon innoculated with the original streptococcus culture, producing a growth in less than forty-eight hours, demonstrating clearly that the catgut had been perfectly sterilized by the iodine process. The same steps were taken with the staphylococcus, colon bacillus and the hay bacillus

(the last named a spore bearing organism highly resistant to heat), with identical results. The anthrax was not used because the inadvisability of introducing that germ into a laboratory connected with the hospital is apparent.

As a more practical and more exacting test, a piece of gut was soaked in a bouillon culture of streptococcus two days, then conveyed to the iodine solution, where it remained but four days. Six inches of catgut so prepared was placed in the peritoneal cavity of a guinea-pig weighing 652 grams, the intestine scarified, the wound closed and sealed with collodion. There were no untoward symptoms, the animal making a rapid recovery and losing 39 grams in two weeks.

Another piece of catgut was treated in a similar manner, using a culture of staphylococcus instead of the streptococcus and about six inches placed within the peritoneal cavity of a pig weighing 660 grams, the bowel scarified, the wound closed and sealed. It made an uninterrupted recovery and lost 70 grams in two weeks.

Upon a third guinea-pig, of 428 grams, gut which had been infected with the hay bacillus and sterilized in the iodine solution was used as in the previous cases. In this instance the convalescence was equally rapid with the loss of but 8 grams by the fourteenth day. In all of these experiments the catgut may have been, and probably was, contaminated with other bacteria than the kind with which it was intentionally infected, but the sterilization was all that could be desired. While guinea-pigs are not especially susceptible to the organisms used, it is an easy matter to produce septicæmia under favorable conditions, and these conditions were afforded without injury to the animals, demonstrating conclusively, to my mind, that the catgut was absolutely sterile. With these experiments a control was applied, using the hospital prepared gut which had not been infected, upon a pig weighing 516 grams. There was no appreciable difference in the recovery of these pigs and the loss of weight was not significant of anything but lack of feeding.

It has become a question whether the amount of iodine present in the sutures and absorbed could create toxic symptoms. The amount of iodine per foot was estimated by weighing the gut, soaking in the solution eight days, drying over the sulphuric acid bath and weighing again. In this way I found the amount of iodine about one-fifth grain per foot. At a very liberal estimate we may say a gynecologist leaves, at the maximum, ten feet of catgut to be absorbed by his patient, equivalent to two grains of

iodine, appropriated by the tissues in a week. It is entirely safe. Twenty grains by mouth have produced death and two hundred and fifty grains have not caused a symptom. The method of preparing the gut is as follows:

The usual commercial variety is cut in desired lengths and wound upon a glass rod three or four inches long, then placed in a covered glass jar or stoppered test tube containing one per cent. iodine in distilled water, with sufficient iodide of potassium to saturate. It is allowed to stand eight days and is then ready for use, rinsing the catgut in a weak solution of carbolic acid or sterile water before it is threaded. The suture is pliable, ties firmly, is strong, and swells very little. It is absorbed in seven to twelve days. Martini prefers it to cumol, formalin or sublimate-alcohol catgut. It has been used about a year in Professor Bloch's service; Professor Page Housen recommends it warmly for operations upon the bile passages; Professor Schou has used it for seven months in all classes of work and has never seen a stitch abscess. It is absorbed in ten to twelve days. The cost is trivial, as a pint of the solution can be made for less than ten cents, enough to prepare four hundred feet. The advantages may be summarized: First, the catgut is absolutely sterile; second, the strength is increased; third, it is non-irritating.

We need a few words further relative to its preparation. The iodine is volatile and should be renewed once each month. The catgut, if allowed to remain in the solution more than six months, becomes brittle. A few have complained that the catgut is weak. If we take the precaution to get a first-class American gut and test its tensile strength before it is wound on rods, the results will be exceedingly gratifying. My personal experience, while not extensive, confirms the views I have stated. I am indebted to Dr. Le Merle for much kind assistance.

FLOATING LIVER.¹

BY

D. W. PRENTISS, M.D.,
Washington, D. C.

MAX EINHORN defines floating liver as: "One which has fallen downward and can usually be restored to its normal position, partially or completely, by certain manipulations." This is understood to mean that the liver descends without dragging down the diaphragm.

In the writings that appeared before 1880, tight lacing, frequent pregnancies, lifting heavy weights, very thin abdominal wall, stout and anemic habit, and pendulous abdomen were among the causes assigned for this condition.

Meissner, in 1869, advanced the theory of congenitally elongated ligaments, forming a mesentery for the liver which he termed mesohepar.

Winkler, in 1872, laid stress of the relaxed abdominal wall, with diminished intra-abdominal pressure, which he considered the chief support of the organ, although he admitted that tearing, twisting, and stretching of the ligaments were important factors.

Wassilief, Delangenriere, and recently Irving Miller, have seen the mesohepar of Meissner, but there is some doubt whether or not it was congenital.

A great number of the writers have agreed with Winkler, but most of them believe that other agencies are at work at the same time.

Later on, Faure blamed faulty nutrition. He says:

"It is this predisposition (badly defined nutritive condition) which in men causes hernias, in women linea albicantes and even-tration, in both, varices, movable kidney, enteroptosis and falling of the liver." (Packard.)

Glenard considers floating liver merely one phase of splanchnoptosis. This is the opinion of most recent authors.

Landau, 1881, mentions relaxation of the ligaments, enlarged abdominal cavity, trauma, and sudden disappearance of fat from the abdomen, and disease of the abdominal walls. (Einhorn.)

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One author, J. H. Carstens, 1901, believes it is usually due to trauma.

Joseph Rosengart, in 1898, published a theory of the cause of enteroptosis, that is based on careful anatomical and embryological investigations. In the fetus the organs are very low down in the abdominal cavity, and for a time after birth they even descend still further. They rise slowly and assume the position found in the adult. We see from this how an arrest of development in the fetus or in the first portion of extrauterine life may produce enteroptosis. Many cases are not produced in this manner, but we see in fully developed cases a condition very closely approaching a fetal arrangement showing that it is a retrograde process. (Hemmeter, 1900.)

So far the theory of Faure, a general nutritive defect in which the ligaments and connective tissues become less resistant to the constant strain, seems to account for the greatest number of cases of floating liver. Usually, there is associated with it a more or less general enteroptosis and relaxed abdominal wall.

Pathological Anatomy.—Before taking up the pathology of floating liver, let us consider the mechanism by which the organ is held in its place.

The *coronary ligament* is simply the peritoneum reflected from the diaphragm to the liver to the edges of the uncovered area on the right lobe, and extending laterally from it.

Left lateral ligament, a peritoneal attachment of the left lobe to the diaphragm.

The *longitudinal ligament* (or falciform or suspensory ligament), if formed by two layers of peritoneum closely united which leave the edges of the longitudinal fissure to be attached to the diaphragm and the under surface of the rectus muscle as far as the umbilicus.

The *round ligament* is the remains of the umbilical vein of the fetus and accompanies the longitudinal ligament to the umbilicus.

Besides these ligamentous attachments, we have the *uncovered area* on the upper surface of the liver, which is firmly attached to the diaphragm by connective tissue.

The *vena cava* is the most important support of all. Attached to the liver for some distance by areolar tissue and the large and small hepatic veins on the one hand, and to the vertebral column and aorta on the other, it serves not only to support the organ, but to prevent its lateral displacements. The cushion of the hollow viscera held firmly in place by the strong muscular walls of

the abdomen, and the attraction of the surface of the liver for the diaphragm aided by atmospheric pressure, are also factors of some importance.

ANATOMICAL VARIETIES may be put into three classes.

Class I. *Anteversion*—a slipping forward or downward of the anterior border of the liver, the posterior border remaining in place or moving upward and forward.

Class II. *Oblique displacement*—the right lobe remains in place or descends, while the left lobe falls to the umbilicus or lower.

Class III. *Complete displacement*—when the liver is separated from the diaphragm by a considerable space.

Cases of the first class are rather common (Einhorn). Oblique displacements are less common, and complete displacements are very rare. In these cases, although the liver is unconnected with the diaphragm, the movements of the organ are usually very limited, owing to the intimate connection with the vena cava. That the vena cava becomes loosened from the vertebral column is certain from the carefully studied cases of Faure, Graham, and Irving Miller.

The peritoneal attachments are all much stretched, and may even appear as a mesentery. With the descent of the liver we necessarily see the duodenum and pyloric end of the stomach move downward. Often there is a general splanchnoptosis, of which floating liver is but one phase. The displacement of the liver and duodenum often so changes their relative positions that a kink is formed in the common duct, which if it obstructs the flow of bile causes hepatic colic, and which, if it persists for sometime, produces jaundice.

Symptomatology.—Uncomplicated dislocation of the liver often gives rise to no symptoms or at most to a dull dragging pain in the right hypochondrium, which is relieved when the recumbent posture is assumed.

Various functional disturbances of the stomach and intestines are quite frequent accompaniments of the general ptosis. We also find all grades of neuroses similar to and dependent upon the same cause as those seen in floating kidney and enteroptosis. Pressure of the organs on neighboring structures may give rise to special symptoms.

Einhorn has given us a very satisfactory classification of its clinical manifestations. He divides the cases into five groups:

Group I.—Those without symptoms.

Group II.—Dyspeptic cases, with indefinite digestive disturbances.

Group III.—Hepatalgia—Almost constant pain in right hypochondrium, often radiating to back and shoulder blades. Sometimes relieved by recumbent posture.

Group IV.—Cases of hepatic colic.

Group V.—Asthmatic cases, feeling of fullness in upper abdominal region, with dyspnea.

The colic in these cases is similar to the crisis of floating kidney described by Dietl in 1864, and to those of dilated and prolapsed stomach described by Kussmaul in 1880.

Gall-stones frequently accompany floating liver, and to them the colic is often due. Sometimes it is due to kinking of the common duct. At others it may be accounted for by pressure on other structures, or by twisting or stretching of the peritoneal supports of the liver and stomach.

Diagnosis.—The diagnosis rests upon the size and character of the tumor and the absence of liver dulness over its usual area, the percussion note being normal lung resonance. If the mass can be pushed under the diaphragm and the liver dulness returns to its normal area, the diagnosis is certain. Many errors in diagnosis have been made.

Treatment.—Medical treatment is confined to building up the system by tonics, electricity, hydrotherapy, massage, gymnastics, etc. Rest in bed in the acute cases until the symptoms subside. A well-made abdominal supporter is by far the most important therapeutic measure. Sometimes an air-pad placed within the binder is advantageous.

Surgical operations for the relief of this condition date back to 1891, when Gerard Marchant sutured the liver to the costal margin with four silk sutures. Treves, in 1895, used three silk sutures, the middle one being placed in the round ligament. In 1895 Lanelongne bared an area on the convexity of the right lobe and then sutured with silk. Pean, in 1896, held the liver in place by suturing the peritoneum below the organ. Legueu, in 1898? used a double silk ligature entirely through the liver edge. Depage, in 1893, not only sutured the liver in place, but attempted to reduce the lax abdominal wall both vertically and transversely. A. F. Jonas, in 1901, used the gall-bladder to anchor the liver. Earlier this was done, but not with the same object in view. If medical measures fail to relieve cases of anteversion and lateral

displacement, suturing the organ into position is to be done. In complete ptosis of the liver, it is doubtful if the organ can be retained in its normal situation by any operation yet described.

1101 14TH STREET, N. W.

THREE UNUSUAL OBSTETRIC CASES.¹

BY

JULIUS ROSENBERG, M.D.,
New York.

CASE I.—Mrs. A. C. Negative family and personal history. Pelvis normal. When about five months pregnant was threatened with miscarriage. Pains every ten minutes, os slightly dilated, ovum occupies the lower uterine segment. Ordered rest in bed. Codeine suppositories grs. ii P. r. r. This treatment succeeded in preventing the premature expulsion of the ovum and pregnancy continued normal and without further disturbance.

An examination at the beginning of the ninth month found the fetus in R. O. A. position; the same was diagnosed at the beginning of labor. When called to see her she had been in labor about three hours. Os soft and dilatable, head well engaged. A short and normal confinement was expected and promised. However, after an elapse of fifteen hours there was hardly any progress and a second examination found that the occiput had rotated posteriorly. The woman was placed in the right lateral position, which caused the head to rotate anterior. The progress of labor from this time on was rapid and uneventful until the head was about to pass the vulva, when, in spite of strong pains, it apparently encountered some obstruction and remained stationary. The pains, as stated, were strong and frequent, the perineum elastic, the head and body of the child not excessive in size, yet progress was absolutely arrested. As the fetal heart-sounds became slow and intermittent I applied the forceps but the extraction of the head was not as easy as anticipated, and when finally delivered I had difficulty in extracting the body. Introducing my hand into the vagina I found to be a fact, what I had only suspected, I was dealing with an extremely short cord,

¹Reported at a meeting of the Eastern Medical Society, Jan. 15, 1904.

which had to be divided before the child (asphyxiated, but resuscitated) could be extracted. The cord measured four inches, and had it not been for a marginal insertion, inversion of the uterus would probably have been added to the numerous complications of a *normal* case.

This case presents two features of more than usual interest; namely, posterior rotation of the occiput and extreme shortness of the cord. Posterior rotation of the occiput during labor is very infrequent, and in my opinion is usually caused by an insufficient flexion of the head. I also have noticed that occiput posterior positions are relatively common, with the back of the child toward the mother's right side. Whether in this case the extraordinary shortness was a factor in producing a posterior occiput I am unable to decide, yet believe it to be the case. Shortness of the cord interferes with the descent and delivery of the child, may cause premature separation of the placenta and consequent hemorrhage or inversion of the uterus. I find, while looking through the literature, that its diagnosis before delivery is rare, and serious accidents are reported due to an endeavor to overcome the arrested progress of the head with forcible forceps extraction.

Besides delay in delivery, the only abnormalities observed were the changes in the fetal heart-sounds, the uterus being neither sensitive nor irregular in outlines; this may justify a suspicion, but not a diagnosis of excessive shortness of the cord.

CASE II.—Mrs. R. A. A young woman with an excellent personal and family history, became impregnated soon after marriage. Pregnancy passed perfectly normal. Labor, at full term, began with rupture of the membranes. Examination—L. O. A. position, pain at long intervals, *pulse and temperature normal*. When in labor twenty-nine hours, low forceps, living child extracted without difficulty. Placenta expressed after twenty minutes, complete. Slight laceration of perineum necessitating a few sutures. While in the act of suturing aforesaid tear patient had a severe post partum hemorrhage. The soft and flabby uterus had escaped from the nurse's hand and was filled with fluid and coagulated blood. Intrauterine massage and hot irrigations caused firm contraction and arrest of bleeding. At this time her temperature was 99°, pulse 130; feels and looks comfortable. Ordered: Watching of uterus, ergotole half a teaspoonful every two hours until four doses are taken. Two hours after delivery patient had a chill, followed by a rectal temperature of 104.2°, pulse 140. The woman does not complain, but asks

for something to eat. Had hot coffee with milk, which she enjoyed and retained. Ordered hot saline enema Oj to be repeated in two hours. Three hours later, that is, five hours post partum, temperature 102° , pulse 130. For ten days the temperature ranged between 101.5° to 102.5° , as the only symptom, the pulse being only slightly accelerated, never rising above 100. There were no symptoms from the breast or pelvic organs. The patient apparently was in perfect health, eating her meals with relish and enjoying regular and undisturbed sleep. Repeated blood and urine examinations always negative. The extreme care in the management of the case, which was conducted under strictest aseptic precautions, also the short interval between delivery and appearance of fever, excludes, in my opinion, puerperal infection. I will also add that the patient left the bed on the sixteenth day and continued in perfect health. Infection may appear within a short time after delivery; yes, even before, but these cases follow a very virulent course and their history usually ends with the patient's exitus. Whether the hemorrhage and consequent shock were the cause of the fever I am unable to decide. Recognizing, however, the importance of tracing every rise of temperature, but especially during the puerperium, to its true source, I regret that in this case I cannot offer a true, satisfactory explanation. I trust that some of my esteemed readers may explain this very perplexing phenomenon.

CASE III.—Mrs. J. B., a primipara, 24 years of age, brought up in affluence and unused to hardships or pain, was not affected by the command of the Lord, who said: "*In sorrow thou shalt bring forth children.*" Was asked to her home at 7 A.M., found patient to be at full term, with membranes ruptured three hours prior to my arrival. Woman very comfortable and free from pain. L. O. A. position, well engaged, heart-sounds normal, os barely admits one finger, membranes ruptured. Sent for nurse, and after her arrival (9 A.M.), as the patient had no pain and my presence was evidently not required for some hours, I prepared to leave. However, upon the urgent request of the husband, an exceedingly nervous man, I again examined the patient. To my astonishment I now found the os half dilated, although the patient assured me that she had not suffered pain or discomfort. I naturally consented to remain and watch this rare and exceedingly interesting phenomenon. Although uterine contractions were strong and at regular intervals, the labor progressing rapidly, my patient looked and felt very comfortable. Her only

symptom was a sensation of pressure not unlike a desire to evacuate the bowels. At 11 A.M., four hours after my arrival, the perineum began to bulge and the head appeared in the vulva. When told that within a few minutes she would be a mother, she laughed and said that she "*never heard of a woman giving birth to a child without pain.*" Nevertheless, the crying of the little stranger, a boy weighing almost eight pounds, soon proved my prediction correct, and I was able to observe and record a phenomenon almost unique in medical literature.

I consider the report of this case not only interesting, but its recording is of medico-legal importance. Needless to say that this case must not be confounded with cases of precipital labor, where two or three pains suffice to expel the child. This woman was in actual labor almost five hours, with uterine contractions at short and regular intervals, differing only by being absolutely painless, the same as during pregnancy.

772 PARK AVENUE

INTESTINAL OBSTRUCTION FOLLOWING LAPAROTOMY.¹

BY

W. SINCLAIR BOWEN, M.D.,

Washington, D. C.

IN each case of abdominal section the operator feels some anxiety for a few days until intestinal peristalsis has been established and the bowels have been well moved. When this function continues normally for a week or so nothing further is apprehended in this particular. Intestinal obstruction may be partial or complete, acute or chronic. It may be due to a great variety of causes acting functionally upon the muscular coat of the bowel or mechanically upon its lumen. Various kinds of peritoneal adhesions or portions of omentum may constrict the bowel more or less completely—either suddenly or gradually.

In acute cases, we have a sudden onset of intense abdominal pain, abdominal distention, constipation, vomiting and rapidly progressive collapse, while in the chronic form the same symptoms appear more gradually and with less intensity. In many

¹Read before the Washington Obstetrical and Gynecological Society, Dec. 18, 1903.

cases of laparotomy it is difficult or impossible to decide between simply deficient peristalsis and a true mechanical obstruction, and when the latter exists it may be detected too late to be relieved by surgical intervention.

To illustrate this point I submit the history of an interesting case, which was referred to me by Dr. I. S. Stone. C. L., aged 20 years, entered Columbia Hospital May 28, 1903. She menstruated since her thirteenth year, duration of period three days, type regular, amount scanty, no pain. Last regular period ended May 21st, but since then she has had a vaginal discharge of a sanguino-purulent character, with some fever. Temperature on admission was 102 degrees; pulse 120. Abdominal palpation: abdomen generally tender and somewhat distended; no tumor mass felt. Vaginal examination: perineum and vulva normal; vagina marital, cervix pushed up under symphysis pubis. Uterus retroverted and bound down posteriorly, immovable. Both broad ligaments were thickened. Tubes and ovaries not palpable. The patient was put to bed and given liquid diet; bowels well moved by salines and an ice bag was placed over the pelvis. Temperature and general condition soon improved, but not the pain.

June 6th, nine days after admission, abdomen was opened. All pelvic organs were found matted together and covered over by dense adhesions. After some effort the uterus was freed from its adhesions, brought forward and suspended from the anterior abdominal wall. The tubes and ovaries were in fair condition and were allowed to remain. The vermiform appendix was dug out of a mass of dense adhesions and removed. Owing to the large area of denuded peritoneum behind the uterus posterior vaginal drainage was instituted by means of a rubber tube. This tube was allowed to remain in place one week. The patient did splendidly for eleven days after operation. During this time she took nourishment well and her bowels moved daily. June 17th, symptoms of bowel obstruction gradually appeared and increased. For two days the usual means of relieving such cases were resorted to, but without success. Bearing in mind the large amount of denuded surface between the uterus and urethra I felt that the obstruction was probably due to intestinal adhesions in that vicinity. Dr. I. S. Stone was called in consultation and it was agreed that something more radical should be done to relieve the obstruction.

June 19.—Patient was anesthetized and the posterior vaginal opening enlarged, through which two fingers were passed and a

coil of intestine was distinctly felt adherent to the posterior surface of the uterus. This was pulled off. The patient, on recovering from the anesthetic, expressed herself as feeling relieved and all symptoms of intestinal obstruction disappeared. For two days she took liquid nourishment, lost all pain and abdominal distention and passed gas freely from the bowel.

June 22.—Symptoms of obstruction again returned and the same procedure was repeated through the posterior vaginal opening and this time a piece of sterile gauze was passed up into the Douglas cul de sac to separate the intestines from the posterior surface of the uterus. This attempt was unlike the other in its results, however, as the symptoms were not relieved. The following morning the patient's condition was very much worse; in fact she was almost in a state of collapse, so that the abdomen was quickly opened. The original abdominal wound was adherent to the intestines throughout its entire extent. The intestines were greatly distended and matted together in every direction, so that it was impossible to distinguish the various portions of the intestinal canal. The bowels were dark bluish, almost gangrenous. The peritoneal coat was stripped off in many places, varying in size from that of a ten cent piece to that of a half dollar. There were also adhesions of intestines to various parts of the abdominal wall distant from the median incision. The uterus was found nicely suspended by its newly-formed ligament to the lower angle of the abdominal wound. The cause of the obstruction was found to be a loop of omentum closely coiled around the small intestine. This stricture was relieved and the portion of omentum excised. At this juncture the patient's condition was so critical that it was deemed hazardous to delay longer with further investigations, so that a portion of bowel above the seat of omental stricture was opened and stitched to the abdominal wound, after allowing a large quantity of fluid and gas to escape outside of the abdomen. The rest of the abdominal wound was closed, except at the point of the artificial anus. The patient was pulseless and seemed to be in a hopeless condition, but after continued efforts at resuscitation, including saline infusion, hypodermic medication and rectal stimulation, she rallied, and during the next few days steadily improved. During the following weeks she gained flesh rapidly and became heavier and stronger than she had been at any previous time. She was annoyed, however, by the fecal discharge upon the abdominal wall, which kept the skin over a large area inflamed and painful.

Daily efforts were made to determine the potency of the intestinal canal from the artificial anus to the rectum, but we never succeeded in forcing water from the rectum up to the artificial anus, although several quarts of fluid were used at a time through a rectal tube. By applying tight compressors over the artificial anus the patient could be made to pass her stools normally. This occurred from time to time for a period of two months and a half so that I now felt that it was safe and advisable to close the artificial anus.

October 15.—For the fifth time the patient was anesthetized and the abdomen opened very carefully above and below the artificial anus. By sweeping the finger around above and below this point no adhesions could be found, except where the bowel had been stitched to the abdominal wall. This was carefully loosened and the opening in the bowel, one and one-quarter inches long, was closed by a double layer of Lembert catgut sutures. The abdomen wound was closed and a small rubber tube left for drainage as a precautionary measure. This was removed on the third day. The patient made an uneventful recovery and is today perfectly well, without any intestinal or pelvic symptoms. The uterus is in normal condition and freely movable, and there are no masses to be felt in either broad ligament. Although both tubes and ovaries, as well as the uterus, were left in, the patient has not menstruated since the first operation, on June 6th. At the time of the last operation, October 15th, it was interesting to note how completely extensive peritoneal adhesions had disappeared. Many strong adhesions which were plainly seen and felt, on June 23d, in both pelvis and abdomen, were entirely absent on October 15th. At this latter date the only evidence of previous handling of any of the viscera was the newly formed suspensory ligament of the uterus and bowel opening. Had it been possible to determine in the first place that the obstruction was caused by an omental adhesion, the abdomen would then have been opened and much subsequent trouble prevented. It seems strange that the symptoms of obstruction were so completely relieved, even for two days, by separating the intestines from the posterior surface of the uterus through the opening in the vaginal vault.

A PLEA FOR EARLY OPERATIVE INTERFERENCE IN CASES
OF ACUTE APPENDICITIS WITH REPORT OF CASES.

BY

J. E. SADLIER, M.D.,
Poughkeepsie, N. Y.

IT is not my purpose to deal with the pathology, bacteriology or symptoms of appendicitis, but rather to cite to you the history of a certain number of cases operated upon during the acute period of the disease and endeavor by so doing to demonstrate the fact that there is quite a considerable proportion of the number of cases of appendicitis that should be operated upon early during the initial attack; that delay in this class of cases is attended by imminent peril to the patient; that an early operation—that is, an operation done during the first thirty-six hours—is almost or quite as safe as one during the interval between attacks; that operations done late during these attacks are very apt to be attended by considerable mortality.

I fully appreciate the fact that every physician in general practice will see a large number of mild attacks of endo-appendicitis—so-called catarrhal form—and that a great mass of these cases recover rapidly without operative interference; that a saline laxative, rest in bed, and the application of an ice pack will seem to work like magic in some of these cases. Yet treating this class of case medically and having success upon these lines of treatment should not deceive us and permit of the graver forms being treated medically when early and proper surgical interference should be instituted to save the patient from the grave dangers of perforation, gangrene or extension of inflammation, thereby giving rise to general septic peritonitis. For this organ, which is of rudimentary character, with its relative increase in lymphoid tissue, and by reason of its frequently dependent position and the fact that the circulation is a terminal one not anastomosing freely with other vessels, make it especially liable to inflammatory conditions, and these conditions, when once established, are less liable to undergo proper resolution, and are especially prone to go on to ulcerative and gangrenous states; or, when by reason of contraction or obliteration of the lumen of the tube, muco-pus, pus, foreign bodies or inspissated fecal matter contained therein, may

ulcerate and perforate its limited walls and spread a virulent infection to the adjacent peritoneal cavity. As an evidence of how rapidly this condition may take place, I shall later on cite a case where upon operation a perforation was found to exist twenty hours after the onset of the attack.

The physician is always first summoned to a patient suffering from this disease and upon him devolves the responsibility of judging as to the probable severity of the attack. Upon him rests the question of outlining the plan of treatment as to whether it shall be medical or surgical. Hence his great responsibility. Unfortunately it is not always possible to estimate by the symptoms present the condition liable to be existing in the abdominal cavity. For many times do we find, when too late, that fatal changes have been taking place inside the abdominal cavity that were not shown or interpreted by the symptoms present in the case. This I shall endeavor to prove to you by the report of cases.

I would strongly urge that no opium be used in any case of appendicitis until it is positively settled that an operation is not to be done. For undoubtedly many lives have been lost by the injudicious masking of the symptoms by the use of opium or some of its derivatives. If the question of operation has been disposed of negatively and finally, then only is the employment of opium justifiable. The prognosis in cases of appendicitis is unfavorable in cases treated medically in proportion to the severity of the infection; in cases treated surgically, in proportion to delay in instituting operative interference. I quote from the excellent work on this subject by G. R. Fowler, who says that "the only cases treated non-operatively in which the prognosis can be said to be favorable are those in which the disease is neither progressive nor stationary, but, on the contrary, is retrogressive within the first twenty-four hours after the onset of the attack. This is best evinced by the symptom of tenderness, provided the latter has not been masked by the administration of opiates. And that the only certain thing about an attack of appendicitis which is not subject to operative treatment or in which operation is delayed, is the uncertainty of its termination." According to the same author, the modes of termination may be (1) perforation prior to the formation of proper adhesions, thus giving rise to fatal septic peritonitis; (2) infection of the peritoneum through the lymphatics or other channels of infection; (3) the rupture of an appendicular abscess and resulting peritonitis;

(4) septic complications arising from extension to an infection of the post-peritoneal connective tissue; (5) gangrenous inflammation of the appendix; (6) pylephlebitis, hepatic abscess, etc.

As evidence of the frightful rapidity with which an infection located primarily in the appendix may spread to and infect the entire peritoneal cavity, giving rise to general septic peritonitis, I will cite the three following cases all operated upon within sixty hours from the onset of the attack.

Mr. C. W., age 46, seen through the courtesy of Dr. Louis Wood; druggist, and a man of rather frail constitution, who had been subject to gastric and intestinal disorders for some years past. He was in his usual health up to and until 4 a. m., March 10th, when he was attacked by the most violent pain located in the epigastric region which he ascribed to acute indigestion, he having eaten some rather indigestible material the previous evening. He suffered continuously for the next forty-eight hours, but considered it to be due to acute indigestion, he persisted in going to his store and attending to his usual duties, taking a large quantity of morphine to relieve the pain. On the morning of March 12th, after a night of frightful agony, being unable by reason of his severe illness to get out of bed, he sent for his physician, Dr. Wood, who at once recognized a condition of developing general peritonitis originating presumably from an attack of appendicitis. At noon of the same day, I saw him in consultation; the man had an anxious facial expression, pulse of 140, distended abdomen, temperature of 103° , thighs flexed on abdomen, etc. It was evident that nothing short of operative interference would save him and that there was but little hope in that direction. Operation 2 p. m., March 12, Drs. Wood and Ward assisting. This was just fifty-eight hours from the onset of the attack. Appendix was found to be gangrenous; no limiting adhesions; abdomen half full of foul pus; extensive general septic peritonitis. Removal of appendix, abdominal lavage, liberal drainage down to pelvis. Patient was put in semi-erect position in bed to favor drainage. Rallied from operation and seemed to improve for forty-eight hours, but then he began to fail and died $3\frac{1}{2}$ days after operation. This is a case where had it not been for the perverseness of the patient in persisting at his work, thereby not allowing a proper diagnosis to be made in time to get an operation, a life was sacrificed. For had it been possible to have operated upon him during the first

twenty-four hours of the attack, the result would have been different.

Mr. W. M., age 22, express agent; a tall, slender young man with only moderate constitution. October 28th, while at work, was taken with acute pain in the abdomen, located about the umbilicus; some nausea and vomiting. Finished his day's work and that evening called upon his physician, John S. Wilson, who found him suffering with what seemed to be a very mild attack of appendicitis. Patient was put in bed, kept perfectly at rest, and with a pulse not to exceed 76, and a temperature not to exceed 100°, some abdominal tenderness and muscular rigidity, but no severe symptoms that would indicate the necessity of operative procedure. Forty hours after the onset of the attack, I saw the patient in consultation with Dr. Wilson, and by reason of the very moderate symptoms shown in his case, although it was very evident that he did have appendicitis, I counseled non-operation. During the afternoon of October 30th, he developed severe pain, nausea, vomiting, and extreme prostration. His attending physician being out of town at the time and the nurse in attendance not realizing the importance of the change in symptoms, several hours elapsed before he was seen and the condition recognized. Then I was called and I diagnosed perforated appendix with developing peritonitis. Diagnosis confirmed by Dr. Waré. Patient had a thready, weak pulse, irregular and intermittent, almost continuous nausea and vomiting, rapidly distending abdomen, and all the evidences of collapse, with rapidly developing septic peritonitis. Patient was removed in the ambulance from his boarding place in this city to my private hospital and operated upon at once. A partially gangrenous and perforated appendix was found, general septic peritonitis with large quantities of pus and fecal matter free in the abdominal cavity. Abdominal cavity thoroughly washed out, free and extensive drainage applied, and patient put to bed in the semi-erect position. Then began a struggle to keep the patient alive which lasted over two weeks, it being necessary to do a transfusion from once to twice daily during that time, to practice gastric lavage, innumerable hypodermics of cardiac stimulants. In fact, it required the almost constant attention of physician and nurses, and the patient delirious from the toxemia and septic absorption from this foul peritoneal cavity. But after unremitting toil, we were finally rewarded by having the patient recover. At present time he is well and strong and at his usual work,—the first and only case

of general septic peritonitis that I have ever seen cured by operation, and a warning that we should not abandon these cases—doomed certainly to death if unoperated upon—without giving them the slight chance, even though very slight it be, that operative interference affords.

Mr. R., student, age 19. Had suffered occasionally slight pain in the right iliac region during the past year. October 24, 1901, presented himself at my office with the usual symptoms of a very mild attack of appendicitis. Was placed in bed and given the usual medical treatment for such a condition, and for forty-eight hours had symptoms of such mild character, with a temperature not to exceed $99\frac{1}{2}^{\circ}$ and a pulse not above 80, that for a matter of nearly two days it would have been considered by any physician or surgeon unnecessary or even criminal to have performed any operative procedure, and yet with these mild symptoms, a condition of gangrene of the appendix and the adjacent cecum was taking place, and the time when this young man could have been operated upon with some degree of safety passed by with only medical treatment administered by myself, and later about fifty hours after the onset of the attack when severe symptoms set in—that is, increasing pain, tenderness, abdominal distention, vomiting and irregular pulse, and the condition changed so rapidly from one of the mildest type to one of the most severe examples of this condition that it was appalling. There was some delay in getting the consent of his parents living in Indianapolis, but an operation was done about sixty hours after the onset of the attack. General peritonitis existed with complete gangrene of the appendix and gangrenous condition of the cecum, ascending colon and adjacent coils of the small intestine—a hopeless condition, from which he died 24 hours later. This is one of the cases of acute fulminating appendicitis with a condition out of proportion to the few symptoms shown—a case belonging to that class that could only have been saved by a surgeon who believes in operating upon every case of appendicitis. For certainly no man who believes that there are cases that can be saved by medical treatment would ever have dreamed that this case would require surgery. The appendix in this case contained a long inspissated fecal concretion, the cause of trouble, and it proves to us the necessity of paying close attention to the pains located in the lower right quadrant of the abdominal cavity—such pains as this young man had suffered with for a year previous to this

acute attack, pains which should have called for a proper examination and operation previous to the onset of this attack.

The foregoing three cases illustrate several important points:

First, that rapidly fatal conditions may arise in an extremely short time.

Second, that the condition inside of the abdomen may be markedly out of proportion to the symptoms shown.

Third, that it may be wise to operate upon these cases even though general septic peritonitis exists; for in this number of three cases—hopeless by medical treatment—one out of the three was saved by surgical interference.

Miss M. McC., seen through the courtesy of Dr. Cronk. Patient's age 37. February, 1902, had an attack of appendicitis from which she recovered by medical treatment, remaining well until October 13, 1902, at 8:30 p. m., when severe sharp pain in the abdomen, vomiting, rigidity of the right rectus, increase in pulse rate and temperature, etc., led the attending physician to make a diagnosis of acute appendicitis. I saw her in consultation, October 14th, at 10 p. m. She was suffering intensely, pulse 120, very weak, temperature 103°, vomiting, great pain in the abdomen, especially in the right inguinal region, intensely sensitive, right rectus rigid. Operation advised and performed October 15, 10:30 a. m., forty-eight hours after the onset. Appendix found to be gangrenous in spots, no limiting adhesions, perforation direct into the abdominal cavity, pus and infective material free amongst the coils of intestine of the right inguinal region, but as yet no general peritonitis. Appendix removed and that portion of the abdomen which was infected, wiped clean with sponges wet in salt solution, liberal drainage, elevated position in bed. Bacteriological examination of secretions from the appendix proved the infecting germ to be the colon bacillus. Patient made a good recovery, except that a fetal fistula persisted and required a secondary operation from all of which she recovered very nicely.

Augustus K., age 25, seen through the courtesy of Dr. Freston. History of repeated attacks of appendicitis, I think 14 in number, with almost constant pain in the right inguinal region between attacks, which was especially severe on any exertion or manual labor. December 21st developed the usual symptoms of a severe attack which persisted with increasing severity for the next three days, especially increasing tenderness. Operated upon December 24th. Appendix found intensely inflamed, swollen to the size of a

man's thumb, partially adherent and curved upon itself. One spot ulcerated so that it was as thin as paper. No general peritonitis. Appendix removed and when it was opened the mucous membrane was found to be gangrenous. A gauze drainage. Patient made an uninterrupted recovery. In a letter to me recently received, he expresses himself as being thoroughly well.

Mr. I. G., age 25, seen in consultation with Dr. John H. Otis, December 22, 1902, 10 p. m., with acute appendicitis which had existed for about thirty hours. History of like pains in that locality for previous year. Seen again with Dr. Otis the following morning, December 23d, 9 a. m. During the night his symptoms had markedly increased, pulse rate, temperature, and especially the abdominal tenderness, all being remarkably greater than on the previous evening. Operation advised and performed at my private hospital 12 o'clock the same day about fifty hours after the onset of the attack. The region of the appendix was thoroughly walled off with gauze, some limiting adhesions liberated, appendix found to be intensely swollen and inflamed, gangrenous in places, and in several points so thin that it was with difficulty removed without perforation. Appendix ligated and removed, but the stump and the adjacent cecum were so swollen, thickened and inflamed that it was impossible to invert the stump. Liberal drainage, elevated position in bed, etc. Patient rallied nicely and made an uneventful recovery.

Miss Frances B., age 11, seen through the kindness of Dr. Cronk. Had been subject to intestinal colic and stomach disturbances for the past year, and during the past summer had an attack of pain, followed by tenderness in the abdomen, which was probably an attack of appendicitis. Present attack began November 1, 1902, 10 p. m., usual symptoms of a severe attack of appendicitis. Seen in consultation November 2nd. Diagnosis confirmed, and by reason of severe symptoms existing, an operation was advised and performed the following morning, November 3rd, about forty hours after the onset of the attack. The organ found to be very much swollen, limiting adhesions not very extensive. The appendix removed and upon incision the proximal part of the mucous membrane was found intensely ulcerated and eroded; while the lumen of the distal half of the tube was distended with blood clot—altogether a very much diseased, swollen, thickened and dangerous appendix, and one which by early and radical operation removed a great source of danger to this patient. Patient made an uneventful recovery.

Mr. E. M., referred by Dr. Stephens, of Gardner, N. Y. A man with an exceptionally good previous history. No history of colic or intestinal disturbances of any character whatsoever until the morning of September 4, 1902, when he was taken suddenly ill with severe pain in the right iliac region. There was nausea, vomiting, increased pulse rate, some increase of temperature, upon which basis a diagnosis of appendicitis was made by the attending physician. I saw him in consultation the first time September 9th. His temperature was ranging from 100 to 103°; pulse about 100. There was a board-like rigidity in the right iliac region, very tender. Had had some irregular chills and chilly sensations. Diagnosis of appendicular abscess. Operation advised and performed the afternoon of the same day. About four ounces of pus evacuated. Appendix not removed (explanation). Patient made an uninterrupted recovery.

Mr. J. C., has been a sufferer for the past two years with attacks of pain in the abdomen, with tenderness in the right iliac region and the usual symptoms of appendicitis. These attacks had been sufficiently severe to keep him in bed, varying the length of time from a few days to several weeks. During the intervals he was unable to continue his usual vocation by reason of the suffering it excited when he exercised to any considerable extent or did any manual labor. Operation had been advised a number of times, but rejected by the patient. This patient was a resident of Norwich, Connecticut, and the latter part of April, 1902, while visiting in Poughkeepsie, he suffered one of his recurrent attacks. It was especially severe, with rapid pulse rate, marked tenderness in the right iliac region and very severe pain. An operation was advised and accepted. A very long appendix, very much inflamed, twisted upon itself, and buried in adhesions of recent as well as of long standing found to exist. Appendix removed, and it was found to contain a concretion, the evident cause of the trouble. This patient made a nice recovery and returned to his home two weeks after the operation.

Willie S., age 14, seen through the courtesy of Dr. Cronk. A perfectly healthy young lad, who had been free from any symptoms of a gastric or intestinal character up to and until date of present attack, hence no evidences of any preexisting attack of appendicitis. April 5, 1902, at 2 p. m., while at school, patient was taken with severe pain in the abdomen, nausea, vomiting, etc. Was taken home and that evening seen by Dr. Cronk, who made a diagnosis of acute appendicitis. The following morning, April

6th, I saw this patient in consultation. He showed all the symptoms of an acute attack of appendicitis of a moderate grade, but one feature in his case was to me rather startling, and that was that he had a very rapid pulse rate ranging from 110 to 120. Considering the early stage of the attack and the comparative freedom from danger at such a time and the possible considerable danger considering the pulse rate, abdominal tenderness, etc., from any delay in surgical interference, I advised immediate operation. This was accepted and the patient operated upon just twenty hours from the onset of the attack. The appendix was found very much inflamed and perforated. A fecal concretion projected directly through the wall of the appendix into the free peritoneal cavity, *and was not walled off by adhesions, no limiting adhesions whatsoever.* Appendix was removed, adjacent parts of intestine wiped clean with salt sponges, and wound closed with a light gauze drainage. Patient made an uninterrupted recovery, barring a slight sinus which existed for some time after he was up and about, but which finally closed. This case is instructive in several points, *first*, the diagnostic importance of the pulse; *second*, the necessity for rapid and speedy surgical interference in all cases showing marked symptoms at the onset; *third*, the rapidity with which perforation may take place.

Mr. G. I. L., seen in consultation with Drs. J. C. and J. H. Otis. A case of acute appendicitis with no history of previous attack; pain very severe at the onset, and characteristic symptoms of a decided character. These symptoms were all retrogressive after the first twenty-four hours, and it was deemed by the attending physician that an operation was not necessary. About that time I also saw him in consultation and considered it was unnecessary to interfere surgically. His symptoms improved up to a certain point and then seemed to remain stationary with the patient about half well, that is, after the first week he still had a tenderness of a moderate degree, slight pain, and an afternoon rise of temperature from one-half to one degree, hence the necessity for keeping him absolutely quiet in bed. These symptoms continuing and as it was very important that this man should be at his business as soon as possible and not be handicapped by recurring attacks of appendicitis, it was agreed to remove the offending organ. This was done November 18, 1901. The appendix was found in a state of semi-acute inflammation and removed. The central cavity of the appendix was almost obliterated by an inflammatory condition. He made a perfect recovery.

E. W., age 7. Seen through the kindness of Dr. Cronk. His first and only attack of appendicitis began November 8, 1901, with the usual symptoms which gradually grew more intense, that is, more pain, more tenderness together with increasing rigidity of the right rectus. Seen in consultation November 10, 10 p. m. Diagnosis confirmed, and by reason of the increasing severity of the disease operation was advised and performed the following morning, November 11th. Appendix found to be only slightly adherent, intensely swollen and inflamed, with several quite large areas of gangrene and the adjacent cecum the seat of three gangrenous spots, developing peritonitis. The appendix removed, the gangrenous spots in the cecum were closed in by Lembert sutures, the adjacent coils of intestine wiped dry and the wound closed. This patient was frail and had a marked degree of toxemia, so that for the first two days following the operation, it was questionable as to his recovery. He then rallied nicely and was discharged cured after three weeks.

Mr. B. C., age 32, seen through the courtesy of Dr. J. C. Otis. Had always enjoyed good health except for an occasional so-called bilious attack, which was always accompanied by severe pain in the right side of the abdomen, but not severe enough for him to call a physician. November 2, 1901, was taken with severe pain in center of abdomen, vomiting, some fever, increased pulse rate, rigidity of the right rectus, etc., upon which symptoms his attending physician based his diagnosis of acute appendicitis. I saw him in consultation, November 4th. I found the abdominal wall over the right inguinal region rigid, board-like; respiration thoracic in character; extreme tenderness in the region of the appendix; temperature 103° ; pulse rate in proportion. Diagnosis of developing appendicular abscess made. Operation November 5th, three days from the onset of the attack, disclosed appendicular abscess which contained about one pint of pus. Patient made a good recovery.

D. W., age 19, student. No history of tuberculosis in the family. Patient a rather overgrown and frail-looking person. During the summer of 1901 complained of pain in the right side of the abdomen for which he received no medical treatment or advice. September 27th, whilst on his way from Poughkeepsie to New York, he was taken with severe pain in abdomen referred to the epigastric region. Upon reaching New York he immediately went to a hotel and summoned a physician and remained under his care for three days, during which time he suffered severely from

what the attending physician called intestinal colic. Returned to Poughkeepsie September 30th, three days after the onset of the attack. I then saw him. Diagnosed appendicitis, although in this case the pain, and especially the tenderness did not localize itself as well as it does in most cases of appendicitis. I treated him medically until October 7th, when the symptoms all becoming intensified, I, after consultation with Drs. Wood and J. S. Wilson, deemed an operation necessary. Upon opening the abdomen, we found that we had to do not only with an appendicitis, which evidently was a secondary condition and tubercular in character, but there was a general condition of tuberculosis of the peritoneum and mesenteric glands of the right half of the abdominal cavity. The appendix as well as several of the large mesenteric glands were removed. After irrigation with salt solution the wound was closed. The patient made a nice recovery and, strange to say, his temperature dropped to normal shortly after the operation; his pain as well as the tenderness all ceased, and he returned to his home in Vermont seemingly very well. During the summer of 1902, whilst I was out of town, he called at Poughkeepsie and was seen by the nurse who had him in charge at the time of his operation. He reported to her that he was in perfect health, had no abdominal pain or tenderness and had gained some 30 lbs. in weight since the time of operation. The diagnosis of tuberculosis of the peritoneum and appendix in this case was confirmed by Dr. Ward, Pathologist.

R. M., age 17, seen through the courtesy of Dr. LeRoy of Pleasant Valley. Was taken with an acute attack of appendicitis October 23, 1901. For several days his condition seemed to be stationary or retrogressive. He then developed chilly sensations, increasing temperature and increasing pulse rate which led the attending physician to suspect formation of pus. In consultation, I felt justified in confirming this diagnosis and upon operation a large appendicular abscess was found. The temperature dropped to normal the second day after the operation and the patient made an uninterrupted recovery.

W. M., age 28. machinist. Seen through the courtesy of Dr. D. M. Sheedy. No history of previous illness of any importance. July 1, 1901, developed an attack of acute appendicitis, which was so diagnosed and treated by the attending physician, but the symptoms not being of severe character and seeming to improve after the first two days, he was treated medically. Later an increase in temperature and the formation of a tumor in the

right iliac region led the attending physician to diagnose appendicular abscess. I saw the case in consultation with Dr. Sheedy, confirmed his diagnosis, and advised operation. Localized pocket of pus was found in which was a gangrenous appendix which was completely amputated from its attachment to the cecum. The temperature dropped to normal shortly after the operation, but for ten days a fecal fistula existed. This gradually closed, leaving only a small sinus which existed for a couple of months and finally closed.

Leonard L., age 11, seen through the courtesy of Dr. Lamoree. Developed symptoms of a typical attack of appendicitis, May 4, 1901. Under medical treatment he did very nicely for several days, or at least seemed to do well, but latterly developed a tumor in the right inguinal region. Some chills and increased temperature led to my being called in consultation. We operated and evacuated a considerable quantity of pus in which was found a completely detached gangrenous appendix. The patient made an uninterrupted recovery.

Mrs. J. C., age 57, widow. During March, 1902, this patient commenced to have pain in the right inguinal region, no sudden onset, but rather a gradually developing condition with pain increasing upon exercise and an inability on her part to lie upon the left side. She paid no attention to this condition for a couple of months and then applied for admission to a general hospital. She was admitted, examined, and a diagnosis of spinal irritation was made. She remained in the hospital but a short time—a matter of a couple of weeks—and left unimproved. She then remained untreated for several months, the pain growing gradually more severe during that time. There was considerable obstinate constipation associated with her case, and this in conjunction with the steadily increasing pain, together with the fact that relatives had died of cancer, led this patient to believe that she had malignant disease of the intestine and if so, she did not care to have anything done. Hence her delay in seeking the advice of a physician. During October, 1902, I was called to attend her. This was eight months from the onset of the trouble. On palpation in the right inguinal region, I found a very tender body, seemingly about the size of an English walnut. It was in the region of the appendix normally placed and the entire right inguinal region was fairly tender on pressure. I hesitated in diagnosis as between chronic appendicitis and malignant disease, rather leaning toward the latter. An endeavor was made to

settle the diagnosis by means of an X-ray picture, hoping that if malignant disease existed it would show in the picture; but the abdominal walls were too thick to allow of such a result. The pain began to increase and during the last week of November the patient began to suffer symptoms of sudden, acute appendicitis, the agony being something very extreme. An operation was then agreed to, and assisted by Dr. J. S. Wilson and Dr. Mann, I operated on her December 2nd. Found a most unusual condition. The proximal end of the appendix for about one inch was perfectly normal; it then expanded, and the remaining portion for about three inches was club-shaped and easily the size of a large thumb. The surface was eroded, very much ulcerated, and projecting in numerous places through the thin walls of this ulcerated appendix were calcareous deposits. The mesoappendix was inflamed and degenerated. In fact, we had to do with a case of chronic gouty appendicitis, upon which was engrafted an acute attack. The adjacent coils of intestine had been irritated by the sharp points of calcareous matter sticking through the appendix and had been infected the last day or two from the acute inflammatory condition. At the extreme distal end of this appendix and lying amongst the coils of the intestine was a mass of colloid material having about the appearance and consistency of lemon jelly and in quantity, I should say, perhaps about four ounces. The patient rallied well from the operation, but the infection spread and she died of general peritonitis a few days later. Another example of how life might have been saved had I or the other physician when in charge of the case previous to me, done an exploratory operation early in the disease when there were symptoms sufficient to warrant it—yet no severe acute condition.

And yet in this case it was perhaps the patient herself who had most to do with the delay.

Miss J. M. C., age 24. Operated upon during March, 1903. Symptoms of acute appendicitis of rather severe grade. Operation within forty-eight hours. Acute appendicitis found to exist. Appendix very much swollen, very few limiting adhesions. Appendix removed. Wound closed without drainage. Uninterrupted recovery.

Mr. J. R., prominent cutlery manufacturer of Walden, N. Y., Saturday, April 4, 1903, 10 p. m., developed severe pain in the epigastric region, which later localized itself in the right inguinal region; severe vomiting, increased pulse rate, slight rise in temperature, abdominal rigidity, tenderness over the appendix, led

the attending physician, Dr. Brownell, to diagnose acute appendicitis. The symptoms steadily increasing in severity during the following day, Sunday, led the attending physician to believe that it was an operative case, and I was called in consultation Monday. There was no question as to diagnosis, and we believed from his symptoms and from the distending abdomen that general peritonitis was developing. Operation advised and performed about forty hours from the onset of the attack. Acute appendicitis existed. No limiting adhesions; no perforation or gangrene. The parietal and visceral layers of the peritoneum of the right half of the abdomen were intensely congested—really a developing condition of peritonitis from infection from the walls of the appendix. Patient rallied well from the operation and recovered.

In reporting this number of cases, I have cited the histories only of those operated upon during the period of acute inflammation and have not reported cases operated upon for chronic appendicitis or for recurrent appendicitis where the interval operation is the one performed. My reason for selecting this acute form of the disease and its operative treatment is that I believe that many lives could be saved by radical and early surgical intervention, and that we should not take the risk incurred by treating a severe case or a moderately severe case medically, but should remove the appendix during the early stage of the disease, when an early, safe operation can be done.

OPERATIVE TREATMENT OF RETROVERSION OF THE
UTERUS; WITH REPORT OF CASES.

BY

FRANKLIN H. MARTIN, M.D.,

Professor of Gynecology, Post-Graduate Medical School, Chicago.

(Concluded from page 448, April number.)

Comment.

VENTRAL suspension received a severe set-back when a pregnancy occurred in a few of the early cases. The suspensions, in a few cases, were found to be fixations. In a few cases the uterus was found suspended in an abnormal position, too far forward. In other cases, suppurating wounds or infected fixation sutures had rendered the uterus immovable.

We have done much to remedy these difficulties. Those who employ suture material are careful to include in their sutures only the peritoneal layer of the fundus of the uterus, and not the muscular tissue of the uterus, nor the aponeurosis of the abdominal wall. Care is now exerted to place the uterus in a natural and not a constrained position. If general infection of the abdominal wall is likely or a denuded condition of the uterus is present, which practically insures a dangerous fixation, the patient is rendered sterile.

Pregnancy in Ventral Suspension.

Very little can be concluded from available statistics on this subject. It would scarcely be possible for serious difficulty to occur in a woman following a suspension without that case being fully advertised and the result published. Thousands of women have had their uteri suspended in the last eighteen years, and undoubtedly thousands have been confined subsequently. Comparatively few who have had normal labors have been reported. This is well illustrated in the cases reported by Dorland,¹⁰⁰ in December, 1896.

I have been able to gather from the literature, including Dorland's 179 cases, 425 cases of pregnancy following ventral fixations and suspensions. Of these 329 were normal in gestation;

309 were normal in labor. The following are some of the difficulties involved in gestation and labor. Nine versions, fifteen forceps deliveries, three placental retentions, three postpartum hemorrhages, twenty-four abortions, four of which were confessedly criminal, eight Cæsarean sections, one ruptured uterus, one inversion of uterus with death of mother, nine fetal deaths, seven maternal deaths, one of these due to eclampsia not due to the operation.

Thus in the pregnancies that I have compiled, I have found seven maternal deaths. This is not a startling number when we consider the thousands of women who have been operated upon in all parts of the world with all kinds of surroundings, with all kinds of serious complications, by all kinds of methods, and all kinds of operators.

A number of the complications cited are trivial and there is nothing in the report of many of the cases to demonstrate that the suspension had anything to do with them. For instance, there are nine versions, fifteen forceps deliveries, three postpartum hemorrhages and twenty-four abortions.

The following additional symptoms and conditions complicating gestation are noted: Sixteen cases of pain, more or less in line of the abdominal incision; four cases of excessive vomiting; ten cases showed the cervix displaced backwards; ninety-five cases of various troubles, not specifically mentioned, occurred during gestation; twenty-four abortions, twenty-four premature labors. Of the number of pregnancies noted above, only three cases of relapse were noted after the pregnancy.

Two hundred and forty-six of the above cases were collected by me. These were, with few exceptions, suspensions. Of these, nine were pregnant at the time of the reports; fourteen miscarried, eight aborted, but of these four were criminal abortions. Other complications during gestation were one epilepsy, five discomfort during gestation, and one delayed gestation. The case of epilepsy went through a normal gestation and labor, notwithstanding the attacks. In labor, abnormalities were noted in fifteen cases, as follows: four forceps, otherwise normal; three slow labors, one slow involution, one face presentation, one shoulder presentation, both delivered normally; one sepsis, with death of mother and child; one induced labor, with death of child; one Porro operation, one inversion of uterus, one eclampsia, not due, however, to the operations; one sacculated uterus, with dead

child, after a fixation operation. There are three relapses reported in this series.

Careful analysis of these cases, were it possible (unfortunately it is not) would, in my opinion, show, as does the admirable report of Dr. Lynch, read at the last meeting of this Society, that the unfortunate dystocia was not the result of a normal suspension, but the result of an intended suspension resulting in a fixation.

The above list of pregnancies may be considered, therefore, almost valueless in connection with the consideration of the improved method of ventral suspension as practiced by Kelly and his followers, and by myself at the present time. Most of the serious complications are noted in the list collected by Dorland and reported in 1897, representing the operation as done by Kelly and his followers prior to that time, which was practically a fixation of the uterus instead of a suspension. It is not fair to Kelly and his improved technique or to the ventral suspensions done by other men with their improved technique at this time, to include these cases.

However, if they will serve to emphasize the danger which may arise as the result of an improper technique in an attempt to a suspension, they will have served a valuable purpose. I am now preparing a list for publication, which will be properly tabulated and which will separate the suspension cases from the fixation cases, and thus allow a proper deduction to be drawn.

My Improved Technique.

It is in some of these cases that I believe that my auto-plastic operation will give superior results.

We must admit that an infected wound will occur in a small number of cases as an unforeseen and unavoidable complication. This, following a suspension in which silk, silkworm-gut, or other permanent suture material has been employed, is liable to lead to infection of the suspending suture. This will, in turn, lead to the throwing out of a protecting exudate at the site of suspension and a constant exaggeration of this condition until the offending suture is rejected or removed. This transforms a suspension into a fixation.

Or, again, without reference to surface infection, a buried suture may become infected from some cause difficult to explain, many months after the suture was inserted, and a disturbance

ensues which is identical to that described above, and again the suspension may become transformed into a fixation.

These rare complications cannot occur in my operation, because no dead permanent suture material is employed. The suspending suture is the patient's own tissue with blood vessels and inherent resistance similar to the surrounding tissues. While my suspensory ligament cannot prevent wound infection, it will not become a nidus which will prolong the results of such infection and concentrate it at our most vulnerable point.

In the 328 cases of ventral suspension which I report to-night, I have records of six pregnancies. Two of these had induced abortions, but not for pathological reasons. Two have been confined at term without complications during gestation or at term, while one is now about to be confined with no complications apparent, and one is to be confined in March.¹ In none of these pregnancies has there been a complication noted. In the four in whom gestation has passed, the uteri, as shown by my own examination, or that of the family attendant, are in normal condition, with the suspending ligament intact.

A labor following a suspension by my method by another surgeon was followed by an inversion of the uterus, and the condition not being recognized early, the patient died.¹⁰¹ The consensus of opinion of those who heard this report, as reflected in the discussion, exonerated the suspension of any responsibility for the cause of the inversion or the death of the patient.

Intestinal Complications Following Ventral-Suspension.

Adhesions of the bowel at or near the seat of the suspensory ligament have been reported by *Kelly*,⁸² one case; *Dickinson*, one case; *Jacobs*, one case; *Ohlshausen*, one case; *Richard Douglas*, one case.

Hall's cases were reported in a discussion,⁸⁵ as follows: He had operated on two cases in which there were intestinal obstructions, and the third patient had an intestinal obstruction due to ventral suspension, there being a coil of the bowel between the uterus and the bladder. In this discussion he did not make clear, except in the last case, in which death occurred, the nature of the obstruction, whether it was due to adhesions of the intestines

¹Both of these cases have been confined without complications since this article was written.—THE AUTHOR.

at or near the seat of the suspensory ligament or the result of a coiling of the intestines about the ligament, or an incarceration of the intestine between the walls of the abdomen and the attached uterus.

A. Palmer Dudley,⁸⁴ in a discussion, reported one case of intestinal obstruction following ventral-fixation, which, however, recovered.

*D. H. Williams*⁸⁵ reports a case in which the ileum and omentum had slipped between two ligaments. They were gangrenous, and four inches of the bowel were resected and joined by the Murphy button.

C. P. Thomas,⁸⁶ of Spokane, reports a case as follows: A diagnosis of appendicitis had been made. "The right iliac fossa was filled with a loop of strangulated gut; the general cavity was filled with serum and some fecal matter. The incision at the right of the rectus was extended downward, when it was found that the loop fast below the false utero-peritoneal ligament formed at a previous ventral fixation had become caught between the uterus and the pubic bone and was constricted at that place. The ligament had to be severed to free the intestine. The bowel was resected about ten inches and the ends united with a Murphy button. The patient made a good recovery. There were no other adhesions in the pelvis, except the intentional one." This same author states that Montgomery and Lindfors each report a case.

Comment on Obstruction of Bowels.

It should be particularly noted that all of these cases were reported at a time when ventral fixation was in vogue. Several of the cases, especially the one reported by Thomas, could not have occurred in the ordinary suspension operation as at present performed.

In my own 328 cases of suspension, extending over eight years, I have had but one record of an intestinal complication following the operation. Case 72 had a secondary laparotomy one year following a suspension, for persistent pain in the left side. The secondary operation revealed an adhesion of a knuckle of small intestine to the left ovary, in the line of a repair of that organ. In the large number of cases involving the separation of extensive adhesions and repair work, or complete ablation of the appendages, it would not have been strange if more cases were followed by troublesome adhesions.

TECHNIQUE

Of the Writer's Auto-Plastic Suspension.

The object in adopting this method of operation was to make a simple, quick, safe, efficient suspension of the uterus, which would accomplish a suspension with a minimum of risk of a fixation supervening, by doing away with any form of permanent suture material.

This is accomplished by substituting for permanent suture material of any kind, a suture of living peritoneum in a way to maintain its vitality and integrity.

This is accomplished in the following manner:—

(a) The abdomen is opened in the median line (the length of the wound depending upon the amount of exploration and repair work to be done), the lower end of the incision being about two inches above the pubes. The patient is then placed in moderate Trendelenburg.

(b) When the repair work is accomplished and the uterus freed from adhesions, a strip of peritoneum, one-third of an inch wide, is severed with scissors from one side of the wound; the upper end of the strip is severed from its peritoneal attachment thus leaving a ribbon of peritoneum the length of the peritoneal incision, attached at its lower end beneath the lower angle of the wound, to the parietal peritoneum above the bladder.

(c) The uterus is now brought forward, a flat Cleveland ligature carrier is passed from behind forward just back of the crest of the uterus beneath its peritoneal covering, for a distance of half an inch, and as the ligature carrier emerges at the crest of the uterus, it is made to grasp the end of the ribbon of peritoneum, and as it is withdrawn the strip of peritoneum is drawn through beneath the half inch isthmus of peritoneum on the fundus of the uterus.

(d) The upper free end of the ribbon of peritoneum is now grasped with forceps and the uterus is slid well down on it, until the fundus lies well forward beneath the lower angle of the wound. A supporting cat-gut suture is passed through the peritoneal coat of the uterus at a point back of that occupied by the new peritoneal ligament (far enough away from it to avoid constricting it), and the uterus is temporarily suspended by this by

passing the two free ends through the peritoneum and deep fascia on either side of the wound and tying it.

(e) The upper free end of the strip of peritoneum is secured by including it in the running cat-gut suture which closed the peritoneum. This reunites it to the peritoneum from which it was severed, and the balance of the wound is closed with layer sutures.

If this procedure is carried out carefully, it makes an immediate suspension by the peritoneum. As the strip of parietal peritoneum is threaded beneath an isthmus of uterine peritoneum and both have abundant blood supply from their original attachments, and as peritoneum is applied to peritoneum at the point of union, everything is favorable for an immediate union. In the meantime, the uterus is maintained in position provisionally, during the life of the suture material, by the cat-gut suture.

Natural History and Future Behavior of This Peritoneal Attachment.

I have had an opportunity to study the future behavior of this new auto-plastic suture in several ways, under different conditions. I have examined bimanually the uterus after suspension by this method in over three hundred cases, at periods varying from two weeks to eight years. One hundred and seventy-six cases I had not only an opportunity of examining within a month after their operations were performed, but from six months to eight years after their suspensions occurred. In five cases, a secondary laparotomy has given me an opportunity to make a careful ocular inspection of the new suspensory ligament. These were cases 38 and 78 in the first series, and cases 38, 72 and 136 in the second series. In case 38, of the first series, in which the secondary operation was a vaginal hysterectomy for cancer, I had an opportunity of making a section of the incised new ligament. The ligaments examined varied in length from one inch to one and a half inches. The parietal and uterine ends varied in diameter from one-third to one-half an inch. The ligaments tapered from these bases to the center of the ligament, which was from one-sixteenth to one-eighth of an inch in diameter. The ligaments were perfectly round. The centers were hard and smooth like firm fibrous tissue and were surrounded with peritoneal epithelium. The two ends were attached, respectively, to

the peritoneum of the uterus and the abdominal parieties. There was no fixation of the subperitoneal tissues. This could be demonstrated by moving the attached ends freely and easily, from side to side, and by tenting the peritoneum by drawing upon the ligament perpendicularly to the attachment. Owing to the greater looseness of the peritoneum on the abdominal parieties, than upon the uterus, a greater freedom of movement was observed in the abdominal end. In case 38, of the first series, where a vaginal hysterectomy was performed, owing to the freedom of the parietal end of the ligament, I was able to draw the ligament well into the upper portion of the vagina, so that its whole length, including the peritoneal attachment on the parieties could be observed by the class. The ligament in this case was barely an inch in length, and it was drawn fully two inches more by the yielding of the peritoneum upon the abdominal wall. The ligament on section has a firm connective tissue center, with its circumference covered with peritoneal epithelium. There were no adhesions nor irregularities near these suspending ligaments in the five cases. The ligaments were perfect specimens of suspensions.

Of the six pregnancies, I have had the opportunity of examining three, before or after labor, or both. The two pregnancies of the first series were absolutely normal. One year after one, and one and one-half years after the other, I had an opportunity of examining the uterus in each of these cases. The uterus, in each instance, was well forward, and while the uterus had a free motility, in neither case did the ligament seem to be more than one to one and a half inches in length. The uterus forced backwards would immediately readjust itself on removing the pressure. In neither of these cases was there any pull on the fundus complained of, nor was there any sign or symptom of a parietal pull.

Another case of Series 1 was confined by Dr. Fernow, in August last. The woman suffered no unpleasant symptoms during gestation and the labor was normal. In this case the family physician noted no abdominal wall nor fundus pull. The cervix was always in normal position. In three months the uterus was involuted and in normal position.

Recently I examined a fourth pregnancy occurring in the first series. The woman is in the care of Dr. Laura Price, of Chicago. The patient is between the eighth and ninth month of gestation. At this time the abdomen is of normal contour, and there is absolutely no appreciable pull on the uterus or abdominal wall. The

cervix is normal in location, and the woman is as well as in two other gestations which occurred several years ago. I anticipate no trouble with this case. Through the courtesy of Dr. Price I had an opportunity of examining this case when the gestation had reached three months. The influence of the ligament at that time could be distinctly felt by moving the uterus.

Another case was in the care of Dr. White, of Chicago. The patient reported her condition to her family physician, and later she aborted herself at six weeks.

Another case of series two is now five months in gestation. The family physician, Dr. Marie White, of Chicago, assures me that the case is progressing normally.

Action of the Suspension During and After Gestation.

The action of the suspensory ligament during pregnancy depends upon the method of its construction. If it is constructed from the peritoneum or when sutures are employed, the sutures are confined exclusively to the peritoneum, the one or two inch ligament remains a one or two inch ligament by drawing and elevating the peritoneum of the abdominal parieties toward the elevating fundus of the uterus yielding in the opposite direction. During the development of pregnancy, the peritoneum upon the uterus and the lower abdomen becomes extremely loose and movable—particularly is this so upon the surface of the uterus, the broad ligaments and the vesico-uterine space. When gestation is ended and involution occurs, the peritoneum resumes its normal firm condition, and the one or two inch ligament will again assume its vocation of retaining the uterus forward.

If, on the other hand, the fixation has not been confined to the the peritoneum by the sutures employed and the attachment has carried to the muscular or fascial layers of the abdominal wall, or suppuration has arisen in the region of the permanent sutures which were meant for suspension sutures, so as to transform a superficial suspension to a deep fixation of the parietal end of the ligament, one of three things must occur when pregnancy supervenes: either the ligament must stretch or develop into a long three to six inch structure which will remain ineffectual after the confinement, or it must break; or it must produce serious complications to the gestation and labor.

Second Series.¹

I present to-night a brief of a second series of 155 cases of ventral suspension, of which I have records, between January 1, 1901, and January 1, 1904. The operation in every case has been after my auto-plastic method.

Summary of Cases of Ventral Suspension.

Between January 1, 1901, and January 1, 1904, I have operated on 155 cases. I have heard by letter from 30 of these cases, and in addition to these I have examined personally at my office 34 more, making a total of 64 cases in this series, from whom I have had recent reports. I have to report only two primary deaths in this number, or 1.2 per cent. The number of cases complicated by other operations than the simple separation of adhesions, is 141. The complications were as follows: Removal of both appendages in 33 cases, removal of one appendage in 35 cases, appendectomy in 5 cases (80, 98, 155, 163, 175); ovarian cyst 26, large 2 (159, 168), hematoma 4 (47, 115, 164, 161), par-ovarian cyst 4 (112, 157, 164, 177), tubo-ovarian cysts 3 (40, 121, 132), myomectomy for fibroids 6 (105, 115, 147, 150, 151, 162), appendages removed for fibroids 3 (112, 115, 137), ectopic pregnancy 4 (88, 100, 126, 136), lithopedion 1 (100), perineorrhaphy or repair of the vagina 34, curettement 92, trachelorrhaphy 6 (36, 47, 66, 69, 111, 148), adhesions of intestines 2 (163, 50), pelvic abscess (broad ligament) 3 (34, 65, 108), hemorrhoids 7, amputation of cervix 7 (48, 154, 156), hernia (inguinal) 1 (74), hydatid cyst 1 (121), dermoid cyst 2 (158, 105), ascites 1 (159). Only six of these cases were uncomplicated by other operations (58, 72, 130, 133, 140, 165). Serious mental disturbance was noted in one case (123). Secondary laparotomies, in which I had an opportunity to make an examination of previous suspensions were three in number (39, 72 and 136). I must report one immovable fixation (100). There are two pregnancies to report in these cases; case 89, now pregnant, and case 144, induced abortion at six weeks. One ovary was resected in 26 cases, and both ovaries in 17 cases. On eight cases operated on in the West I have received no reports.

Summary of Both Series of Ventral Suspensions.

In the first series reported in 1901, extending from January 1, 1897, there were 173 cases. These added to my present series,

¹See page 652 for summary of cases.

make a total of 328 cases of ventral suspensions in the eight years. In the first series of 173 cases I had six deaths at the operation, or 3.5 per cent. In the present series there were two deaths, or 1.2 per cent. In the total number of 328 cases, there were eight deaths, or 2.1 per cent.

In the first series of 173 cases, I was able to get subsequent reports at the time of publication, of 114 cases. In the present series I have had reports from 64 cases, making the total number of cases heard from in the two series, 178.

In but 19 cases in the two series, were there no accompanying operations, and in these nineteen there were no deaths.

The appendages were removed for septic conditions in 114 cases of the first series and in 33 cases of the second series, making a total in the two series of 147 cases. In the first series every case where the appendages of either side were removed was reported as removal of the appendages. In the last series, the appendages of one side were removed in 38 additional cases.

In the first series there were five large ovarian cysts removed. In the second series two, making a total in the two series of seven large ovarian cysts.

In the first series, the appendages were not removed from either side in 29 cases. In the second series there were 72 cases in which neither appendage were removed.

Conservative surgery was done upon the appendages in the first series of cases in 29 cases; in the second series in 43 cases, making a total of 72 cases of conservative surgery.

In the first series there were four cases operated on for ectopic pregnancy, and in the last series also there were four additional cases of ectopic pregnancy, making eight cases in all.

Perineorrhaphy was an accompanying operation in 25 cases of the first series and in 42 of the second, or in 67 cases in the whole series.

Curettement of the uterus was performed in 28 cases of the first series and in 102 of the second series, or a total of 130 cases in the two series.

Trachelorrhaphy was performed in 19 of the first series and in six of the second, making 25 in the whole series.

Serious mental disturbances are noted in nine cases of the first series, and in two cases of the second series, or in 11 cases.

I can report four cases of pregnancies in cases reported in the first series, and two in the cases reported in the second series, or six pregnancies in the two series.

Comment, General Summary, Conclusions.

A multiplicity of distinct operative procedures for the remedy of any particular pathological condition is always indicative that there is no one procedure which has been fixed upon as finally adequate by a consensus of surgical experience and opinion.

So with the multiplicity of operations for the correction of retrodisplacements of the uterus, there is as yet no one which satisfactorily fills all indications. We have not arrived at the stage where we can say the question is settled. It is the most prolific subject for controversy in gynecology. For years the treatment of the pedicle in hysterectomy for fibroids was a subject equally prolific. Finally Stimpson and Baer told us to ligate the arteries before they entered the pedicle. That settled it. The procedure was so simple, so rational, so adequate, that we adopted it with a sigh of satisfaction, and forthwith stopped talking about it.

In studying the various operations for retroversion, and in analyzing the results, in listening to the arguments of the advocates of different procedures, can we yet discern light through the tangle and dare we predict a verdict?

The best way to proceed in our analysis, it seems to me, is to ascertain whether there are not a few points upon which we may agree as settled facts; then to conscientiously ignore our personal interests in any particular procedure, so that in sifting the points still under controversy, we may at least lay down safe rules which may be followed until such a time as some genius touches the spring which will make all clear.

With such an idea in view, I wish to submit the following propositions:—

PROPOSITION I.

The floor of the pelvis and the normal relation of the uterus with the vaginal vault must be restored, as preliminaries, in order to obtain permanent and satisfactory results in operative procedures for retroflexions and retroversions.

This means not only that lacerations of the perineum or recto-vaginal septum should be repaired, but that long cervices, which, from their great length, parallel the vagina and thus sway the fundus backward, must be amputated; that short anterior vaginal walls must be lengthened; that low insertions of anterior vaginal walls on cervix must be released and remedied; and, correspond-

ingly, that the posterior vaginal vault, when voluminous and long, should be shortened.

Likewise, cervical lacerations of importance should be repaired and chronic inflammation of the endometrium should be cured.

PROPOSITION II.

The Alexander operation of shortening the round ligaments is a safe, rational and permanently satisfactory procedure in persistent retroversion in which no pelvic complications exist demanding a peritoneal opening.

This operation is to me one of the most satisfying in all surgery. Its indications, however, are very narrow, and satisfaction with the operation can only come by observing well these indications. In my own 407 reported cases of operation for retroversion, only 79 cases, or 16.9 per cent., were Alexanders. I believe that this per cent. is about right, although I never risk an Alexander operation if I am in the slightest doubt of clear indications, after a careful examination of the pelvis under anesthesia. This extreme care has led to the opening of a number of abdomens where I was in doubt, and the findings, on inspection, have revealed that an Alexander might have been safely performed.

In reference to the proposition (a) the Alexander has no legitimate mortality; (b) it permanently cures, anatomically and symptomatically, retrodisplacements; (c) it does not complicate pregnancy and involution occurs with the uterus remaining in normal position; (d) it leaves no unpleasant sequelæ (i.e., unequal pulling of ligaments, painful wounds or hernias) if proper technique is followed; (e) while the operation is a delicate one, it does not require more than an average surgical skill for its successful accomplishment. The ligaments are never absent, in only two per cent. of cases attenuated, and in about the same percentage of cases degenerated.

There are no operations which may be properly substituted for the Alexander operation when the indications for this operation exist at all.

PROPOSITION III.

When an Alexander operation is contra-indicated in a persistent retroversion because of doubt as to pelvic adhesions or diseased adnexa, it should become a routine procedure to open the peritoneum by a short exploratory incision through the abdominal

wall above the symphysis, for the purpose of managing the adhesions and the diseased adnexa.

Before any one takes exception to this proposition, please note that I qualify it by recommending it as the *routine* route for exploration, and not as the only route. The exception I will admit in the case of those operators who have specially trained themselves, through choice or force of circumstances, to operate frequently through the vagina, or where, for some sentimental reason, one of general training is urged to operate through the vagina in order to preserve the abdominal wall intact or to avoid a scar.

As a routine procedure, however, the abdominal route should be selected, because (a) an abdominal incision does not require a super-refined specialism on the part of the surgeon doing the work; (b) special skill in opening the abdomen is acquired in a larger percentage of surgeons because of the greater frequency of the procedure for other difficulties, as compared with the vaginal incision; (c) because of the opportunity given through an abdominal incision of examining all other abdominal organs (the appendix, the gall bladder, the kidneys, intestines, liver, stomach and spleen); (d) the greater facility of examining in detail the whole of the fundus of the uterus, the extent and character of the adhesions and their attachments before separating them; the condition of the appendages and their relations to surrounding tissues before they are disturbed; the possibility of determining definitely by direct ocular inspection the difficulties to be overcome; the practicability of an effectual operation and if necessary, its extension to complicating conditions in adjoining organs which must of necessity lie entirely out of reach and range of a vaginal incision; (e) because of the difficulties experienced through the vaginal route in avoiding the bladder and the ureters, the impossibility of inspecting the uterus and the appendages without first dislodging them from their relative positions, and then only by piecemeal, as they are crowded in review one by one before or through the small opening in the vaginal incision; the absolute impossibility of inspecting the source and extent of adhesions before they are first stretched or separated; the comparatively great difficulty of doing adequate repair work on the appendages through the vaginal opening; the impossibility of reaching neighboring organs for inspection and repair work, and finally, the comparative difficulty of shortening the round ligaments through the vaginal route and the utter failure of vaginal

fixation, as shown by its effects in cases of subsequent pregnancy; (f) ventral suspension, any one of the number of operations for shortening the round ligaments intra-peritoneally or shortening the utero-sacral ligaments may be easily accomplished through the abdominal incision; (g) the results following the operation through the abdominal incision are fully as ideal as those through the vagina, and this, too, taking into consideration the fact that much more extensive and radical procedures are possible through the abdominal than through the vaginal incision; (h) all the reasons given in favor of the abdominal route as against the vaginal route are emphasized when comparing the abdominal route with Goldspohn's method of entering the peritoneum through the dilated inguinal canal, except that in his method, when he once does accomplish his repair work, through his unique entrance, he can complete the operation as an Alexander operation and get the benefit of the round ligament suspension. The Goldspohn route, in the hands of those who would have the courage to practice it, will enlarge slightly the range of cases in which extra-abdominal shortening of the round ligaments, or the Alexander operation, may be practiced.

PROPOSITION IV.

Some form of simple superficial ventral suspension should be followed as a routine method of retaining the uterus forward in cases where sterility is rendered imperative from the nature of the accompanying procedure, or when the patient has passed the child-bearing age.

In making this proposition, I purposely recommend it as a routine procedure, and not as the only method of accomplishing the end. The time consuming operations of intra-abdominal shortening of the round ligaments may be practiced in these cases by super-specialists, but not as a routine by the average operator.

(a) The simple superficial efficient suspension, as practiced by the followers of Howard Kelly, or the modification of it as practiced by myself in 328 reported cases, are operations so easy in technique that they may be employed by any one who can make an abdominal incision or hold a needle, without consuming more than one minute of extra time after an extensive operative procedure.

(b) The reports of hundreds of operations of ventral suspensions, as practiced for years, demonstrate that this method of re-

taining the fundus of the uterus forward is efficient and accomplishes the result with a minimum of discomfort.

(c) There is no chance for a strong pull at two points, as when a bilateral too-shortening of the round ligaments has occurred, nor for a one-sided pull, as where one of the ligaments has been made too short.

(d) The suspension is central, the uterus is well balanced forward, the attachment is yielding and a large range of movement for the uterus is allowed without danger of pull or pain.

(e) Those who are not convinced that a pregnancy is safe with an uncomplicated ventral suspension, can yet conscientiously practice this operation where pregnancy is impossible.

(f) The supreme advantages of the ventral suspension over the rival operations where pregnancy is impossible, are the simplicity of its technique, the rapidity of its accomplishment and the satisfaction of its results.

PROPOSITION V.

When the repair of complicating conditions in retro-displacements requires a laparotomy, but the operative procedure leaves the woman with child-bearing possibilities, a superficial ventral suspension, or intra-peritoneal shortening of the round ligaments should be employed to retain the uterus forward.

Operations of this description should command skilled operators and the operator must be prepared to adopt the operation that will best suit the exigencies of the case. As a routine in such cases, I unhesitatingly recommend the ventral suspension (a) because it can be done more quickly and easily than the round ligament operation; (b) because it makes a symptomatic, as well as an actual, cure of the retro-displacement without unpleasant sequelæ, as noted in detail in considering the previous proposition; (c) because the report of my cases of ventral suspensions and many hundreds of Kelly's improved suspensions, demonstrate that the uncomplicated operation is no bar to pregnancy, gestation and normal labor; (d) because gestation and labor and involution will occur with suspensions, and the uterus remains in position.

In intra-abdominal round ligament operations, the Wiley-Mann, the Webster-Baldy, and the Byford, on account of their rationality, simplicity and ease of technique, particularly appeal to me. The only cases in which I should select an intra-abdominal short-

ening of the round ligaments in preference to the suspension, is where the retroverted uterus had been involved in adhesions to such an extent that the whole fundus is denuded and a simple suspension might favor extensive adhesions to the abdominal wall.

PROPOSITION VI.

In a small but definite percentage of cases of complicated retroversions where the accompanying pathology is such as to cause extensive denudation of the peritoneal covering of the uterus, or where the repair work on the appendages is such as to be liable to lead to dystocia, the surgeon should at once render the woman sterile by amputating the tubes into the horn of the uterus, obliterating them by inversion sutures, and then suspend the uterus.

In Cæsarean section or the Porro operation with seriously contracted pelves, we do not hesitate to render the woman sterile. Likewise in operation on cases of retroversion, with seriously diseased conditions, the sequelæ of which may lead to dystocia, should pregnancy subsequently occur, we are justified in rendering the woman sterile. This should be accomplished by amputating the tube at the horn of the uterus, à la Watkins. When possible, however, otherwise, the sexual norm of the woman should be retained by preserving a portion of the ovaries.

These cases are very rare, but in examining one of my own cases lately (Case 110), which was operated upon two years ago, I was startled to find the entire uterus immovably fixed. It was clearly adherent to the intestines and to the omentum; the vaginal vault was indurated and stiff and the cervix was fixed and unyielding. At the same time, there were no indurated masses to be felt and there were no cystic conditions. The history of the operation told the story. A retroverted uterus was dug out of the cul-de-sac, cystic tubes and ovaries were separated from surrounding soft parts, including intestines, omentum and bladder. The appendages were laboriously repaired, in order to preserve sexual and child-bearing powers to the woman. The uterus, with its whole peritoneal projection denuded and covered with shreds of separated adhesions, was suspended and the abdomen was closed. Pus cavities and cysts had been removed, the uterus was forward, but every square centimeter of the uterus, the repaired appendages and the peritoneal surface of the bladder, invited and undoubtedly immediately found permanent attachments. This woman menstruates, and one or both tubes may be patulous, but

I tremble to think what the complications might be if she should conceive. This subject should have been rendered sterile when the abdomen was open.

To recapitulate and briefly summarize the burden of this paper, I would say:—

1. A very small percentage of uncomplicated retroversions may be cured by correcting an anterior position of the cervix by lengthening the anterior vaginal wall and shortening antero-posteriorly the mucous membrane of the posterior vaginal vault after the Schücking method.

2. The Alexander operation of shortening the round ligaments is a safe, rational and permanently satisfactory procedure in persistent retroversion in which no pelvic complications exist demanding a peritoneal opening and should be pursued as a routine operation in such cases.

3. In slight adhesions of the fundus of the uterus with little other pathology to be palpated, a posterior vaginal incision may be made by one accustomed to deep vaginal operation, the adhesions separated and the sacro-uterine ligaments shortened.

4. With slight adhesions present and little pathology to be demonstrated, an anterior vaginal incision is justified in the hands of an experienced operator, provided that he adopts a vaginal round ligament operation for correcting the displacement and never a fixation.

5. When an Alexander operation is contra-indicated in a persistent retroversion, because of doubt as to pelvic adhesions or diseased adnexa, it should become a *routine* procedure to open the peritoneum by a short exploratory incision through the abdominal wall above the symphysis for the purpose of managing the adhesions and diseased adnexa.

6. Some form of simple superficial ventral suspension should be followed as a routine method of retaining the uterus forward in cases where sterility is rendered imperative from the nature of the accompanying procedure, or when the patient has passed the menopause.

7. When the repair of complicating conditions in retrodisplacements requires a laparotomy, but the operative procedure leaves the woman with child-bearing possibilities, a superficial ventral suspension or intra-peritoneal shortening of the round ligaments should be employed to retain the uterus forward.

8. In a small but definite percentage of cases of complicated retroversions where accompanying pathology is such as to cause

extensive denudations of the peritoneal covering of the uterus, or where the repair work on the appendages is such as to be liable to lead to dystocia, the surgeon should at once render the patient sterile by amputating the tubes into the horn of the uterus, obliterating them by inversion sutures, and then suspend the uterus.

9. In performing a suspension or an Alexander, one important element of danger can be eliminated by substituting for dead permanent suture material my autoplasmic methods of securing the suspensory ligaments.

BRIEF OF SECOND SERIES OF VENTRO-SUSPENSIONS.

- 33.—Mrs. J. W. M.; 32; Chicago; January 2, 1901; Woman's; endometritis, diseased ovaries; ventro-suspension; curettement: resected right ovary and tube, left ovariectomy; examined case two years later in perfect health, menstruation normal, all old symptoms gone; January 6, 1904, examined in office, fine shape.
- 34.—Mrs. T. B. C.; 32; Chicago; ———, 1901; Woman's; large double pyosalpinx; ventro-suspension; removal of appendages complete, and large pelvic abscess drained, large double pyo; examined two years later and found in perfect health, had not menstruated.
- 35.—Mrs. H. S. M.; —; Kansas; February 4, 1901; Woman's; endometritis, uterus anteverted and retroverted, hematoma and cyst of right ovary; ventro-suspension; curettage: resection right ovary; December 17, 1903, writes all old symptoms gone, not pregnant.
- 36.—Mrs. L. A. T.; —; Chicago; February 23, 1901; Woman's; lacerated cervix and perineum, hemorrhoids, endometritis, cystic ovaries, retroversion; ventro-suspension; trachelorrhaphy, resection of hemorrhoids, resection of ovaries; recovered.
- 37.—Mrs. A. E. C.; 33; Indiana; January 22, 1901; P. G.; double pyosalpinx; ventro-suspension; double salpingo-oophorectomy; December 17, 1903, writes all old symptoms disappeared.
- 38.—Mrs. W. H. T.; 40; South Carolina; February 24, 1901; P. G.; lac. perineum, retroversion; ventro-suspension; perineorrhaphy; success.
- 39.—Miss L. D.; 23; Illinois; February 20, 1901; P. G.; ———; ventro-suspension; dilatation, curettement. March 17, 1902, secondary laparotomy, left salpingo-oophorectomy, uterus found suspended by band one-third inch long, perfect position, no adhesions near fundus.
- 40.—Mrs. G. E.; —; Chicago; March 5, 1901; Woman's; cyst rt. broad ligament, tubo-ovarian cyst right side, adherent appendages on left side, retroversion, hemorrhoids; ventro-suspension; curettage, removed hemorrhoids, removed pathological condition of right side; success.
- 41.—Mrs. J. M. J.; —; Michigan; April 5, 1901; Woman's; lac. perineum, rectocele, cystocele, polypoid endometritis; ventro-suspension; curettage, perineorrhaphy; December 10, 1903, writes: perfectly relieved of symptoms, and in perfect health in every way.

- 42.—Miss E. D.; —; Kansas; April 7, 1901; P. G.; cystic ovary, retroversion; ventro-suspension; resection of cystic ovaries, curettage; November 11, 1903, examined in office, entirely relieved of all menstrual and pelvic symptoms, slight pain at menstruation.
- 43.—Mrs. C. K. A.; 26; Alabama; April 11, 1901; Woman's; right ovarian abscess, cystic degeneration of ovary (left), retroversion; ventro-suspension; resection of right tube and ovary, plastic operation on left ovary; December 28, 1903, seen in office in last two months perfectly well, uterus in perfect place and freely movable.
- 44.—Mrs. E. B. G.; —; South Dakota; April 17, 1901; P. G.; lacerated perineum, retroversion; ventro-suspension; curettage, perineorrhaphy; success.
- 45.—Mrs. H.; 30; Chicago; April 14, 1901; P. G.; lacerated perineum, salpingitis; ventro-suspension; curettage, perineorrhaphy, salpingo-oophorectomy, removal of hemorrhoids; success.
- 46.—Mrs. M. H.; —; Chicago; May 1, 1901; Woman's; retroversion, endometritis; ventro-suspension; curettage; success.
- 47.—Mrs. W. J. D.; —; Chicago; May 4, 1901; P. G.; lacerated cervix, lacerated perineum, retroflexion of uterus; ventro-suspension; curettage, trachelorrhaphy, perineorrhaphy, hematoma removed from left ovary; success.
- 48.—Mrs. J. C.; 66; Iowa; May 18, 1901; P. G.; —————; ventro-suspension; amputation of cervix, perineorrhaphy; success.
- 49.—Mrs. J. C.; —; Chicago; May 19, 1901; Woman's; suspected pregnancy, cyst of left ovary; ventro-suspension; curettage, left ovariectomy; success.
- 50.—Mrs. G.; —; —————; June, 1901; Woman's; universal omental adhesions, cystic degeneration of right ovary, left ovarian stump adherent to intestine; ventro-suspension; curettage, breaking up adhesions, resection right ovary, removal left ovarian stump; success.
- 51.—Miss W.; —; —————; June, 1901; Woman's; tubercular oöphoritis, salpingitis; ventro-suspension; oöphorectomy, salpingectomy; success.
- 52.—Mrs. E. B.; 58; Illinois; June 7, 1901; Charity; bilateral cervical laceration, perineum lacerated to sphincter ani, cystocele, rectocele, hemorrhoids; ventro-suspension; curettement, perineorrhaphy, both ovaries resected; January 4, 1904, writes: in fine health, old symptoms gone, menstruation regular and painless.
- 53.—Mrs. M. H.; 28; Chicago; June 17, 1901; Woman's; double pyosalpinx, adhesions, conception one month, retroverted and adherent uterus; —————; June 11, curettage, June 17, adhesions broken up and ventro-suspension; January 14, 1904, examined in office, success.
- 54.—Mrs. G. C.; 22; Chicago; June 19, 1901; Charity; —————; ventro-suspension; curettage, cystic left ovary resected; success.
- 55.—D. M.; 24; Chicago; June 19, 1901; P. G.; lac. perineum, pyosalpinx; ventro-suspension; curettage, perineorrhaphy, salpingo-oöphorectomy; success.

- 56.—Mrs. E. G.; 20; Wisconsin; July 15, 1901; P. G.; ———; ventro-suspension; curettage, slightly cystic ovaries partially excised; success.
- 57.—Miss C. M.; —; Chicago; July 18, 1901; Woman's; double adeno cystoma; ventro-suspension; double salpingo-oöphorectomy; —.
- 58.—Mrs. A. L.; —; Iowa; July 21, 1901; P. G.; ———; ventro-suspension; ———; December 15, 1903, writes: none of old symptoms returned, in fine health, gained twenty pounds.
- 59.—Mrs. S. H. B.; —; Chicago; July 30, 1901; Woman's; endometritis, lac. perineum, diseased ovaries; ventro-suspension; curettage, perineorrhaphy, left salpingo-oöphorectomy, resection right ovary; success.
- 60.—Mrs. M. C.; 21; Illinois; August 1, 1901; P. G.; double pyosalpinx; ventro-suspension; salpingotomy; success.
- 61.—Mrs. L. E. C.; —; Chicago; August 1, 1901; P. G.; double pyosalpinx; ventro-suspension; double salpingo-oöphorectomy; success.
- 62.—Miss L. T.; 20; Chicago; August 6, 1901; Charity; acute gonorrhea; ventro-suspension; curettage, breaking many adhesions, left tube and ovary removed, right ovary resected; success.
- 63.—Mrs. C. V. L.; —; Iowa; August 10, 1901; Woman's; salpingo-oöphoritis; ventro-suspension; salpingo-oöphorectomy; success.
- 64.—Miss L. K.; —; Chicago; August 25, 1901; P. G.; infantile uterus, anteflexed, retroversion, cervix long; ventro-suspension; resection of ovary; December 30, 1903, some pain, but decidedly better.
- 65.—Mrs. M. M.; —; Chicago; September 6, 1901; P. G.; pyosalpinx, ovarian abscess adherent to uterus and simulating fibroid; ventro-suspension; pus tubes removed; recovered.
- 66.—Mrs. F. S.; —; Chicago; September 7, 1901; P. G.; laceration of cervix, right cystic ovary; ventro-suspension; curettement, trachelorrhaphy, resection of right ovary; success.
- 67.—Mrs. E. S.; —; Chicago; September 8, 1901; Woman's; oöphoritic cysts, endometritis, salpingitis; ventro-suspension; removal right ovary and tube, resection left ovary and tube; —.
- 68.—Mrs. D. G.; 22; Chicago; September 16, 1901; P. G.; retroversion, adhesions; ventro-suspension; curettage, right ovary and tube removed; success.
- 69.—Mrs. L. W. E.; —; Iowa; September 16, 1901; Woman's; lacerated cervix, lacerated perineum, retroversion; ventro-suspension; trachelorrhaphy, perineorrhaphy; December 9, 1903, writes: no return of symptoms, slight pain in left side.
- 70.—Miss J. R.; —; Chicago; September 19, 1901; Woman's; double pyosalpinx, retroversion; ventro-suspension; double salpingo-oöphorectomy; success.
- 71.—Mrs. Wm. S. W.; —; Oklahoma; September 21, 1901; Woman's; endometritis, cystic ovary, retroversion; ventro-suspension; resection left ovary; December 21, 1903, writes: old symptoms gone, entirely relieved.
- 72.—Mrs. K. K.; 24; Chicago; September 30, 1901; Charity; pyosalpinx; ventro-suspension (K); curettage, breaking many adhesions; Jan-

uary 19, 1902, secondary lap., uterus found in proper position and held by band one and one-half cm. long, one-half cm. thick and one cm. broad, passing from fundus to abd. wall, allowing free motion and precluding retroversion, left ovary and tube removed at this time.

- 73.—Mrs. A. V.; 23; Illinois; October 11, 1901; Charity; hypertrophied labia minora, lacerated perineum, rectocele and cystocele; ventro-suspension; curettage, perineorrhaphy, left tube and ovary ligated off; January 9, 1904, examined in office, uterus in perfect position, had curettage three months ago for headache without benefit, found very movable kidney at this examination.
- 74.—Mrs. W. A. V.; —; Illinois; October 20, 1901; Woman's; endometritis, lacerated perineum, left inguinal hernia, left cystic and adherent ovary; ventro-suspension; curettage, perineorrhaphy, left salpingo-oöphorectomy, repair of hernia, left tube and ovary removed; success.
- 75.—Mrs. M. LaR.; 38; Chicago; October 24, 1901; Charity; cystic ovary, chronic endometritis; ventro-suspension; curettage, right ovary resected; January 11, 1904, writes: symptoms relieved, menstruation painless (later operated for movable kidney, which has relapsed).
- 76.—Mrs. J. M.; 41; Indiana; October 28, 1901; P. G.; left ovarian tumor; ventro-suspension; double oöphorectomy, ovarian tumor malignant; January 21, 1902, returned to P. G. for inoperable carcinoma of intestines.
- 77.—Mrs. F. C. F.; 40; Illinois; October 29, 1901; Charity; perineal tear, cystocele, rectocele, some degree of retroflexion; ventro-suspension; curettage; success.
- 78.—Mrs. H. F.; 41; Chicago; November 11, 1901; Charity; retroversion, fundus adherent in hollow of sacrum; ventro-suspension; excised ovaries and cyst; success.
- 79.—Mrs. K. S.; —; —; November 23, 1901; Charity; —; ventro-suspension; curettage; success.
- 80.—Mrs. E. T. H.; —; —; December 6, 1901; Woman's; appendicitis, retroversion, laceration of perineum; ventro-suspension; curettage, perineorrhaphy; success.
- 81.—Mrs. J. G.; 33; Michigan; December 22, 1901; Woman's; right ovarian cyst, infected left appendages; ventro-suspension; double oöphorectomy; success.
- 82.—Mrs. L. R.; 42; Indiana; —, 1902; P. G.; lacerated perineum, hemorrhoids; ventro-suspension; perineorrhaphy, hemorrhoids removed; success.
- 83.—Miss G.; 22; Chicago; —, 1902; —; pus tubes; ventro-suspension; curettage, right ovary and tube ligated off and removed, left ovary and tube separated from omentum and left in place; success.
- 84.—Mrs. J. S.; 39; Chicago; —, 1902; Charity; lacerated perineum, hemorrhoids, retroversion, cystocele, diseased appendages; ventro-suspension; curettage, perineorrhaphy, hemorrhoids ligated; success.

- 85.—Miss J. M. M.; —; Chicago; January 9, 1902; Woman's; general pelvic adhesions, double salpingitis, plastic retroversion with adhesions; ventro-suspension; curettage, breaking up of adhesions; December 31, 1903, examined in office, all old symptoms gone.
- 86.—Mrs. A. A.; 53; Chicago; February 5, 1902; Charity; retroversion, lac. perineum; ventro-suspension; perineorrhaphy, curettage; success.
- 87.—Mrs. T. J.; 26; Chicago; February 17, 1902; Charity; double pyosalpinx; ventro-suspension; double salpingo-oöphorectomy; success.
- 88.—Mrs. M.; 33; Chicago; February 26, 1902; Charity; right tubal pregnancy; ventro-suspension; perineorrhaphy, removal of conception product; success.
- 89.—Mrs. L. B.; 28; Chicago; March, 1902; P. G.; —————; ventro-suspension; resected both ovaries, curettement; September 8, 1903, Dr. White says: now pregnant, will be confined in April, 1904, uterus elevating naturally and nothing to indicate complications.
- 90.—Mrs. H. S.; —; Illinois; March 6, 1902; P. G.; bilateral salpingitis, ovaritis; ventro-suspension; bilateral salpingo-oöphorectomy; success.
- 91.—Mrs. G. D.; 33; Chicago; March 10, 1902; P. G.; pus in right ovary; ventro-suspension; dextro-unilateral salpingo-oöphorectomy; success.
- 92.—Mrs. D.; 16; Chicago; March 18, 1902; —; —————; ventro-suspension; resection of ovaries; February 23, 1903, writes: all old symptoms gone, menstruation regular and painless.
- 93.—Miss J. McC.; —; Illinois; March 25, 1902; P. G.; salpingitis, retroversion; ventro-suspension; double salpingo-oöphorectomy; success.
- 94.—Miss A. T.; 16; Chicago; April 1, 1902; P. G.; double pyosalpinx, firm adhesions, retroversion; ventro-suspension; double salpingo-oöphorectomy; success.
- 95.—Mrs. J. H.; 31; Illinois; March 30, 1902; P. G.; left pyosalpinx; ventro-suspension; left salpingo-oöphorectomy; success.
- 96.—Mrs. P. M.; —; Illinois; March 30, 1902; P. G.; double pyosalpinx, retroversion; ventro-suspension; double salpingo-oöphorectomy; success.
- 97.—Mrs. M. J.; —; Chicago; April 2, 1902; Woman's; endometritis, retroversion; ventro-suspension; curettage; success.
- 98.—Mrs. A. J.; 28; Chicago; April 21, 1902; Charity; —————; ventro-suspension; appendectomy, left oöphorectomy, left tube removed; success.
- 99.—Mrs. Z.; —; Chicago; April 27, 1902; Woman's; retroversion, endometritis; ventro-suspension; curettage; December 18, 1903, examined in office, uterus in normal position, very small from senile atrophy, slight prolapse of anterior vaginal wall, symptoms materially relieved.
- 100.—Mrs. C. P. P.; 23; Chicago; May 5, 1902; P. G.; tubal pregnancy; ventro-suspension; removal tube and ovary; December 7, 1903, examined in office, uterus in perfect position and fully movable.

- 101.—Mrs. E. E.; 22; Chicago; May 26, 1902; Charity; pelvic adhesions; ventro-suspension; ligation and removal of tubes and ovaries, breaking up adhesions to pelvic wall; success.
- 102.—Mrs. A. Y.; 30; Illinois; May 26, 1902; P. G.; laceration perineum, retroversion, light adhesions to left ovary, graafian cyst of left ovary; ventro-suspension; perineorrhaphy, resection left ovary; success.
- 103.—Mrs. P.; —; Iowa; May 28, 1902; P. G.; retroversion, laceration of cervix; ventro-suspension; perineorrhaphy, curettage; success.
- 104.—Miss B. S.; —; —; June 30, 1902; —; endometritis, laceration of cervix, cyst left ovary, hemorrhoids; ventro-suspension; excision left ovary, excision hemorrhoids, curettage; success.
- 105.—Mrs. G.; —; —; June, 1902; Woman's; left dermoid cyst, fibroid of uterus; ventro-suspension; double salpingo-oöphorectomy, enucleation of small fibroid; success.
- 106.—Mrs. H. W. K.; —; Chicago; June 4, 1902; Woman's; double pyosalpinx; ventro-suspension; curettage, double salpingo-oöphorectomy; December 21, 1903, examined in office, uterus in perfect position, perfectly movable, never in better health.
- 107.—Mrs. F. B.; 24; Chicago; June 4, 1902; Charity; double pyosalpinx, retroversion; ventro-suspension; ligated and removed both tubes and ovaries, virulent pyosalpinx, pus running from abdominal ends of both tubes; success.
- 108.—Mrs. E. G.; 19; Chicago; June 23, 1902; P. G.; left pyosalpinx and ovarian abscess, right salpingitis; ventro-suspension; curettage, left salpingo-oöphorectomy, right tube resected; success.
- 109.—Mrs. B. C.; —; Chicago; July 7, 1902; P. G.; left tubo-ovarian abscess, right salpingitis and ovaritis, retroversion; ventro-suspension; left salpingo-oöphorectomy, right ovary and tube resected, curettage; success.
- 110.—Mrs. M. J.; —; Chicago; July 14, 1902; Charity; retroversion; ventro-suspension; curettage; December 21, 1903, examined in office, old symptoms gone, uterus forward and firmly fixed to abdominal wall.
- 111.—Mrs. M. T.; —; Wisconsin; July 17, 1902; P. G.; retroversion, laceration of perineum, laceration of cervix; ventro-suspension; trachelorrhaphy, perineorrhaphy; December 17, 1903, not all old symptoms gone.
- 112.—Mrs. M. N.; —; Chicago; July 21, 1902; Charity; parovarian cyst, fibroid, cystic ovaries; ventro-suspension; removal of parovarian cyst size goose egg, removal of both tubes and ovaries to cause atrophy of fibroid uterus, curettage; success.
- 113.—Mrs. L. Y.; —; Chicago; July 26, 1902; P. G.; small cystoma of ovaries, retroversion; ventro-suspension; curettage, resection of both ovaries; December 18, 1903, examined in office, uterus in perfect position, menstruation normal and painless.
- 114.—Mrs. M. R.; —; Chicago; August 11, 1902; Charity; retroflexion with adhesions; ventro-suspension; removal of two small cysts of ovaries, freeing of adhesions; success.

- 115.—E. P.; —; Chicago; August 25, 1902; Charity; small fibroid, left hematoma of ovary, double pyosalpinx, retroversion with adhesions; ventro-suspension; curettage, myomectomy, removal left tube and ovary, ligation right ovarian artery, adhesions freed; success.
- 116.—Mrs. S. S.; —; Indiana; August 27, 1902; P. G.; double adhesive salpingitis, right oöphoritic cyst; ventro-suspension; double salpingo-oöphorectomy; December 16, 1903, writes: not all old symptoms gone, but improved.
- 117.—Mrs. S. S. B.; —; Alabama; September 3, 1902; P. G.; retroversion, laceration of perineum; ventro-suspension; curettage, perineorrhaphy; December 23, 1903, writes: pain in left side, vaginal discharge, asthma.
- 118.—Miss F. R.; —; Kansas; September 6, 1902; Woman's; retroversion, slight cysts in right ovary; ventro-suspension; curettage, puncture of cysts; May 10, 1903, examined in office, entirely relieved of old troubles in every way.
- 119.—Mrs. B. F.; —; Chicago; September 8, 1902; Charity; retroversion, diseased appendages; ventro-suspension; excision left ovarian cyst, curettage; December 21, 1903, examined in office, old symptoms entirely gone, no menstrual pain, gained twenty pounds, uterus perfectly movable and in perfect position.
- 120.—Mrs. L. H. C.; —; Indiana; September 9, 1902; Woman's; retroversion, lacerated perineum; ventro-suspension; curettage, perineorrhaphy; perfect success.
- 121.—L. G.; —; Washington; September 17, 1902; Charity; pyosalpinx, double tubo-ovarian abscesses, hydatid cyst left side, caseous degeneration of parts, dense adhesions; ventro-suspension; removal both tubes and ovaries and cysts, freeing adhesions; December 22, 1903, Dr. Price says in fine condition when went away.
- 122.—Mrs. M. F.; 39; Illinois; September 22, 1902; P. G.; hemorrhoids, laceration of perineum; ventro-suspension; perineorrhaphy, resection of ovaries, curettement; December 19, 1903, writes: much improved, menstruation regular and painless.
- 123.—M. K.; —; Chicago; September 24, 1902; Charity; slightly cystic ovaries, retroversion with antelexion, operation hysteria; ventro-suspension; curettage, resection of ovaries; December 8, 1903, returned to hospital for indefinite pain in left side, neurotic and probably hysterical.
- 124.—Mrs. K. M.; 60; Chicago; September 25, 1902; P. G.; retroversion with adhesions about uterus and both ovaries; ventro-suspension; curettage, ligation of both ovarian arteries for hemorrhage, adhesions broken up; success.
- 125.—M. H.; —; Chicago; October 14, 1902; P. G.; pyosalpinx, retroversion; ventro-suspension; curettage, removal of nearly all right ovary and right tube resected and ovary transplanted, left tube and ovary entirely removed; December 22, 1903, examined in office, uterus in perfect position and perfectly movable, menstruation regular.
- 126.—Mrs. F. L. E.; —; Chicago; October 27, 1902; P. G.; ectopic pregnancy; ventro-suspension; salpingectomy; success.

- 127.—Mrs. E. A.; 55; Chicago; October 25, 1902; P. G.; retroversion, lacerated perineum; ventro-suspension; curettement, perineorrhaphy; success.
- 128.—Mrs. K. M.; 27; Chicago; October 26, 1902; P. G.; inflammation tubes and ovaries; ventro-suspension; repair appendages; success.
- 129.—Mrs. E. Q.; 34; Illinois; October 30, 1902; P. G.; —————; ventro-suspension; curettage, repair appendages on both sides; December 22, 1903, writes: Dr. Davis says all O. K., but patient says not.
- 130.—E. K.; —; Chicago; November 3, 1902; Charity; retroflexion; ventro-suspension; many adhesions broken up; success.
- 131.—Mrs. W. S.; —; Blue Island; November 9, 1902; P. G.; retroversion, diseased appendages; ventro-suspension; removal of right ovary and tube; success.
- 132.—Mrs. H. F. M.; —; Texas; November 10, 1902; Woman's; left tubo-ovarian abscess, extensive perimetric adhesions, right adhesive salpingitis; ventro-suspension; removal of abscess, right salpingo-oophorectomy; December 7, 1903, writes: all old symptoms disappeared.
- 133.—Mrs. J. S.; —; Chicago; November 12, 1902; P. G.; retroversion; ventro-suspension; —————; success.
- 134.—Mrs. K. P.; —; Illinois; November 13, 1902; P. G.; right tubal pregnancy, retroversion; ventro-suspension; curettage, right salpingo-oophorectomy; December 22, 1903, writes: all old symptoms gone, very well in every way and gaining weight, menstruation regular and painless.
- 135.—Mrs. B. Y.; —; Illinois; November 13, 1902; P. G.; endometritis, retroversion; ventro-suspension; curettage; December 17, 1903, writes: all old symptoms gone, menstruation regular and painless, very fine health.
- 136.—Mrs. F. M. S.; —; Chicago; December 1, 1902; Woman's; extra-uterine pregnancy in right tube, extensive adhesions; ventro-suspension previously by Besly; removal right ovary and tube; examined result of previous suspension, uterus in fine position, held by band about one inch long.
- 137.—Miss B. F.; 18; Chicago; December 10, 1902; Charity; pyosalpinx, retroversion; ventro-suspension; pus tubes enucleated from fibroid uterus, ovarian artery ligated; success.
- 138.—Mrs. H. J.; —; Wisconsin; December 10, 1902; P. G.; retroversion and adhesions to left side; ventro-suspension; curettage; success.
- 139.—Mrs. E. W.; —; Illinois; January 4, 1903; —————; —————; ventro-suspension; perineorrhaphy, curettage; December 22, 1903, writes: old symptoms gone, not pregnant since, menstruation regular and painless, health good.
- 140.—Mrs. E. M. K.; —; Illinois; January 12, 1903; P. G.; retroversion, extreme, and flexion; ventro-suspension; —————; December 17, 1903, writes: all old symptoms gone, menstruation regular, painless; December 22, 1903, examined in office, uterus in perfect position and movable, nervous symptoms gone, gained flesh.

- 141.—Mrs. M. B.; 28; Wisconsin; February 12, 1903; P. G.; retroversion, endometritis and salpingitis, lacerated perineum; ventro-suspension; curettement, perineorrhaphy; December 22, 1903, writes: bearing down pain relieved, but not backache, general health not improved.
- 142.—Miss M. C.; —; Wisconsin; February 13, 1903; Woman's; —; ventro-suspension; —; December 16, 1903, examined in office, perfectly well in every way.
- 143.—Mrs. M. E. C.; —; Keulland; February 16, 1903; P. G.; retroversion, diseased right ovary, lacerated perineum; ventro-suspension; perineorrhaphy, resection right tube and ovary; December 31, 1903, writes: best health for years, gaining in flesh.
- 144.—Mrs. J. R.; —; —; March, 1903; P. G.; gonorrheal salpingitis with adhesions; ventro-suspension; left ovary and pus tube removed, adhesions around right ovary freed, pus showed gonococcus; January 8, 1903, Dr. White: patient in best of health, had (in December) induced abortion at six weeks.
- 145.—Miss V. W.; —; Illinois; March 20, 1903; P. G.; metrorrhagia due to retroversion and congestion; ventro-suspension; curettage, resection right ovary; December 21, 1903, writes: much improved, menstruation regular and only slightly painful.
- 146.—Miss D. M.; 19; Chicago; March 28, 1903; P. G.; —; ventro-suspension; curettage, removal of pus tube on one side; success.
- 147.—C. W.; 25; Chicago; April 6, 1903; Charity; —; ventro-suspension; curettage, removal of two small myomata, upper and anterior surface, right kidney anchored; success.
- 148.—Mrs. A. B. S.; —; Chicago; May 10, 1903; P. G.; retroversion, lacerated perineum; ventro-fixation; repair of lacerations; January 7, 1904, examined in office, perfect condition.
- 149.—Mrs. G. T. P.; —; Chicago; May 11, 1903; Woman's; enlarged and adherent tubes and ovaries; ventro-suspension; left ovary removed, right ovary resected, right tube resected; December 15, 1903, writes: in fine condition.
- 150.—Miss T. P.; 28; Indiana; May 13, 1903; P. G.; —; ventro-suspension; dilatation of cervix, curettage, several small cysts of ovary enucleated, small fibroids on uterus enucleated, right tube and ovary normal, uterus and tubes and ovaries bound to rectum by firm adhesions which were separated; success.
- 151.—Mrs. S. G. P.; —; Chicago; May 27, 1903; P. G.; cystitis and fibroids, retroversion and adhesions; ventro-suspension; examination of bladder, myomectomy; success.
- 152.—Mrs. C. W. R.; —; Illinois; May 22, 1903; Woman's; retroversion, adherent cyst of right ovary and ligament; ventro-suspension; curettage; —.
- 153.—Mrs. R.; —; Ohio; June 9, 1903; P. G.; retroflexion, procidentia, left ovary impacted behind uterus; ventro-suspension; relieved ovary; December 23, 1903, Dr. Pugh writes: uterus apparently in position, pain in left ovarian region.
- 154.—Mrs. R. P.; —; Chicago; June 15, 1903; Charity; lacerated perineum, prolapsus and retroversion; ventro-suspension; perineorrhaphy, amputation of cervix; success.

- 155.—Mrs. P. E. G.; 40; Indiana; June 22, 1903; Woman's; retroversion, appendicitis; ventro-suspension; curettage, appendectomy; December 20, 1903, much improved.
- 156.—E. O'B.; —; Chicago; June 23, 1903; Charity; ———; ventro-suspension; perineorrhaphy, amputation of cervix; success.
- 157.—Mrs. W. O'B.; —; Chicago; June 29, 1903; Woman's; right tube and ovary adherent, also left parovarian cyst; ventro-suspension; curettage, adhesions broken up, cyst enucleated; December 25, 1903, examined in office, uterus in normal position with large range of movability, old symptoms completely gone.
- 158.—Mrs. N. P.; 30; Michigan; July 24, 1903; P. G.; dermoid cyst back of uterus, double pyosalpinx, reposition of uterus; ventro-suspension; enucleation of dermoid, removal of tubes and ovaries, both sides; December 28, 1903, writes: fine condition, completely relieved of symptoms.
- 159.—Miss L. N.; —; Missouri; July 25, 1903; P. G.; multilocular cyst of both ovaries, cystitis, ascites; ventro-suspension; bilateral oöphorectomy, salpingectomy; died August 27, 1903.
- 160.—Mrs. H. S.; 32; Chicago; July 5, 1903; P. G.; slight endometritis, uterus anteфлекed and retroverted, many fine adhesions back of uterus; ventro-suspension; adhesions broken up; January 7, 1904, in perfect condition.
- 161.—Mrs. T. J. D.; —; Chicago; August 5, 1903; P. G.; retroversion, very slight range of motion, dense adhesions posteriorly, left ovary cystic, adnexa adherent; ventro-suspension; curettage, removal left tube and ovary, right ovary normal, right ovarian artery tied, adhesions broken up; success.
- 162.—Miss K. N.; 30; Chicago; August 14, 1903; P. G.; uterus retroverted and impacted, simulating fibroid, small subperitoneal fibroid back of uterus; ventro-suspension; curetted, small fibroid enucleated; success.
- 163.—Miss B. L.; 22; Chicago; September 12, 1903; P. G.; pyosalpinx, chronic, old, retroversion, endometritis, adhesions between uterus and intestines, appendix adherent to right horn of uterus; ventro-suspension; curettage, left tube and ovary removed, appendix loosened and removed; success.
- 164.—Mrs. E. H.; —; Chicago; September 15, 1903; Charity; endometritis, retroversion, right parovarian cyst, hematoma of left ovary, adhesions; ventro-suspension; curettage, enucleation of parovarian cyst, double salpingectomy and oöphorectomy, right ovary transplanted to horn of uterus; success.
- 165.—Mrs. W. D. C.; —; Chicago; September 23, 1903; Woman's; retroversion with adhesions; ventro-suspension; success.
- 166.—Mrs. C. E. J.; —; Wisconsin; September 29, 1903; P. G.; reposition and enlargement of uterus; ventro-suspension; curettage; success.
- 167.—Mrs. C. A. W.; —; Chicago; September 30, 1903; Woman's; double pyosalpinx with large appendix nearly five inches long, cyst of right broad ligament; ventro-suspension; curettage, removal of both tubes and ovaries except portion of right horn of uterus, appendectomy, removal of cyst; success.

- 168.—Mrs. C. S.; —; Michigan; October 5, 1903; P. G.; papilocystoma of right ovary, smaller cyst on same side; ventro-suspension; removal of cyst, ovary and tube on right side; success.
- 169.—Mrs. J. B.; —; Chicago; October 7, 1903; P. G.; double pyosalpinx with many adhesions; ventro-suspension; curettage, removal both tubes and ovaries; success.
- 170.—Mrs. C. M.; —; Indiana; October 8, 1903; P. G.; laceration of perineum, retroflexion, enlargement of uterus, left ovary somewhat cystic, laceration perineum; ventro-suspension; curettage, perineorrhaphy, removal of part of left ovary; success.
- 171.—Mrs. G. E. G.; —; Wisconsin; October 20, 1903; P. G.; double pyosalpinx; ventro-suspension; curettage, double pyosalpingo-oophorectomy; success.
- 172.—Mrs. T. B.; 35; Chicago; November 3, 1903; P. G.; movable kidneys, retroflexion; ventro-suspension; curettement, repair of appendages, two weeks later anchored kidneys; success.
- 173.—Mrs. S.; —; Wisconsin; November 12, 1903; Kenosha Hospital; laceration cervix, laceration of perineum, anteflexed retroverted uterus; ventro-suspension; curettage, perineorrhaphy; success.
- 174.—Mrs. C. B.; 31; Chicago; November 18, 1903; P. G.; retroflexion, hemorrhoids; ventro-suspension; curettage, hemorrhoids excised; success.
- 175.—Mrs. R. P. S.; —; ————; November 19, 1903; Woman's; retroversion, prolapsed right kidney, bruised and adherent appendix; ventro-suspension; curettage, appendectomy, fixation of right kidney; success.
- 176.—Mrs. J. G. S.; —; Texas; November 26, 1903; Woman's; cystic left ovary, retroversion; ventro-suspension; curettage, left oophorectomy; success.
- 177.—Mrs. G. P.; —; Chicago; December 14, 1903; P. G.; double pyosalpinx, parovarian cyst right ovary, endometritis; ventro-suspension; double pyosalpingectomy, portion of left ovary left, parovarian cyst removed; success.

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TRANSACTIONS OF THE NEW YORK OBSTETRICAL SOCIETY.

Meeting of January 12, 1904.

The President, DR. G. W. JARMAN, in the Chair.

FIBROMYOMATA UTERI.

DR. H. J. BOLDT presented two tumors: 1. A myofibroma removed by abdominal hysterectomy from a patient, 31 years of age, who had had menorrhagia and metrorrhagia for five months. Curettage had been performed several times by the family physician without relief. 2. A submucous fibroid, removed by dissection of the cervix and myomectomy from a patient who had been sent to him with a diagnosis of cancer. The patient left her bed the third day.

CANCER OF THE UTERUS.

DR. H. J. BOLDT presented three specimens, two, adeno-carcinoma of the body; one, an epithelioma of the cervix. One, supposed to be a submucous fibroid from the negative report of the curetting, was removed by supravaginal hysterectomy because of the narrowness and rigidity of the vagina. The correct diagnosis was only made after opening the uterus at the completion of the operation, when it was too late to remove the cervix. The other specimen of cancer of the body was removed by vaginal hysterectomy and the patient left her bed upon the fifth day. The specimen of epithelioma of the cervix was removed with the upper fourth of the vagina by vaginal hysterectomy. In all the cases an endometritis causing menorrhagia had existed for some time prior to the beginning of the carcinomatous changes.

DR. E. H. GRANDIN said that he had seen two or three or four cases of embolism following hysterectomy, and, therefore, considered it unwise to allow patients to get out of bed after such a major operation.

DR. H. C. COE spoke of the surgical interest of endometritis preceding or accompanying beginning cancer, and stated that his practice in cases of recurring hemorrhage, although the report of the pathologist was negative, is to advise removal of the uterus in women over forty years of age.

A LARGE FIBRO-CYST WITH SMALL PEDICLE.

DR. J. DOUGAL BISSELL presented a tumor that had been removed from a negress, 35 years of age, who had had no symptoms except an enlargement of the abdomen. The lower portion of the tumor filled the pelvis and was of firmer consistence than

the upper portion, which was adherent to the omentum and from which came its chief supply of blood, as the connection with the uterus was less than an inch in diameter.

DR. RALPH WALDO said that he had noticed hemorrhages did not occur so commonly in negroes as in white women.

ENUCLEATION OF A LARGE SUBMUCOUS FIBROID BY A MODIFIED CÆSAREAN SECTION.

DR. HIRAM H. VINEBERG narrated the history of a woman, 26 years of age, who had been suffering from menorrhagia, pain, enlargement of the abdomen and increasing inability to walk or perform her household work. There was marked anemia, but the general condition was good. The abdomen was occupied by a large, smooth and movable tumor that reached to the umbilicus and from its relations to the cervix and its spheroidal shape, a diagnosis of submucous fibroid was made. The uterus was delivered through a good-sized abdominal incision without difficulty and, while an assistant made pressure upon the uterine arteries, a longitudinal incision was made in the anterior wall of the uterus and enucleation of the tumor accomplished with some difficulty because of the spongy character of the tumor and the ill-defined line of cleavage. The redundant and flabby edges of the uterine wall were excised, and after inserting a strip of iodoform gauze through the cervix into the vagina, the incision into the uterus was closed with deep and superficial catgut sutures. The incision in the abdominal wall was left open at the lower angle, into which a small gauze drain was passed down to the line of sutures in the uterus. The entire operation was completed in one and three-quarters of an hour without marked hemorrhage. The pulse at the completion was 120, and of good volume. Collapse occurred ten hours afterwards, without apparent cause, as there was no apparent sepsis, nor did the appearance of the vaginal or abdominal drain indicate bleeding. On account, however, of the unusual technic, a secondary laparotomy was immediately performed and the uterus removed, although no hemorrhage was found. The peritoneal cavity was flushed with salt solution, leaving a quantity within the abdomen. Intravenous infusion was followed by marked improvement and finally recovery of the patient. Under similar circumstances again he would not reopen the abdomen, but trust to intravenous infusions.

RUPTURED INTERSTITIAL PREGNANCY.

DR. HIRAM H. VINEBERG presented a most excellent specimen of this condition that he had removed from a patient, 27 years of age, who had had one normal pregnancy and delivery six years ago. Her last regular menstruation occurred in April and without special symptoms. On July 28 she was suddenly seized with severe pain, which was most marked in the right side of the lower abdomen. Retention of urine occurred the next day and she was unable to pass flatus. There was also vomiting of a greenish fluid.

The next day a high enema brought away some flatus without much relief. The pain and tenderness persisted. The pulse was 120, and she was admitted to the hospital with the diagnosis of intestinal obstruction. The face was anxious and the anemia was marked. The tongue was moderately dry and coated with a brown fur. The pulse was dicrotic and 140. The temperature was 102.5. The abdomen was markedly distended and rigid. A tentative diagnosis of ruptured tubal pregnancy could not be confirmed by bimanual examination because of the absence of the usual signs, *i.e.*, mass either in Douglas's cul-de-sac or on either side of the pelvis. A considerable enlargement of the uterus could be appreciated with an indistinct fullness above the pelvic brim upon the right side. A rupture of a pregnant uterus seemed probable. A laparotomy revealed considerable blood, amniotic fluid, and a fetus corresponding to the fourth month of gestation, floating among the intestines. The whole fundus of the uterus appeared to be blown off. A total hysterectomy was performed and, although she had rather a stormy convalescence, she was able to sit up and leave the bed upon the seventeenth day.

SEPTIC AND FATAL PERITONITIS FOLLOWING CURETTAGE FOR STERILITY.

DR. H. J. BOLDT narrated the history of a woman who, with the exception of three abortions, had no symptoms referable to the pelvis. A curettage had been performed under aseptic precautions with the hope of a future pregnancy progressing to full term. Upon the seventh day after being up, an attack of severe pains in the abdomen began with all the symptoms of severe peritonitis. A diagnosis of acute double pyosalpinx with rupture of the right sac was made. An exploratory puncture in the posterior fornix made just prior to her death, which followed upon the twelfth day following the curettage, confirmed the diagnosis. Dr. Boldt narrated this history to emphasize the risk connected with a minor operation, unfortunately regarded by most general practitioners as not dangerous, and performed frequently without justification.

DR. E. H. GRANDIN suggested the possibility of a perforation of the uterus, as he had seen a similar case in which fully a pint of pus was found in the pelvis and at operation it was easy to discover that the uterus had been perforated by a curette without the knowledge of the physician who had performed the curettage.

DR. RALPH WALDO said the case emphasized the danger of curettage, which was practiced too often with slight indications. He thought of the possibility of a cellulitis resulting in an abscess and subsequent rupture as a cause in Dr. Boldt's case, or that previous disease had existed.

DR. J. P. COOKE said that curettage was a common practice among general practitioners for the cure of sterility, and he knew of three cases in which ectopic gestation had followed such operations. He thought a protest should be made against this lax

practice of resorting to curettage without definite indications.

DR. A. BROTHERS desired to enter a word of protest against the universal use of the curette by men who were not able to do it. He had collected by very careful search seventy cases of uterine perforation and had seen during the past year three cases.

DR. H. N. VINEBERG related the history of a case of pyemia following a curettage for endometritis. No perforation was found and the operation was performed by a man accustomed to performing operations.

STRONG ALCOHOL IN THE PERITONEAL CAVITY AS A GERMICIDE AND STIMULANT.

DR. J. DOUGAL BISSELL described an operation he had performed for double pyosalpinx, in which the entire pelvic cavity and the edges of the abdominal incision were swabbed with 95 per cent. alcohol for germicidal purposes. He referred also to six other operations of the same kind in which he had adopted the same procedure with uniformly successful results, both as to recovery and primary union of the abdominal incisions. He also spoke of the stimulating and sustaining properties of a mixture of alcohol and salt solution (an ounce and a half in a pint) when introduced into the peritoneal cavity in one of the cases. He narrated the history of a case in which collapse occurred under the anesthetic before the operation was begun. Resuscitation by Nélaton's method was followed by another collapse when the abdomen was opened. The use of alcohol and the salt solution was followed by such an improvement in the condition of the patient that he was able to complete a hysterectomy and appendectomy without further trouble.

His conclusions:

Pure alcohol can be used on the peritoneal surfaces without harm. It is probably of great value in septic cases because of the powerful germicidal properties.

It is a hemostatic.

It is a powerful stimulant and in cases of collapse and depression from loss of blood it can be advantageously used, diluted with a little salt solution.

DR. E. H. GRANDIN said that in such cases, if the general peritoneal cavity were protected with gauze, it was his custom to mop out the pelvic cavity with carbolic acid and then pack it with gauze soaked in alcohol, or sometimes with pure carbolic acid, followed by alcohol.

DR. RALPH WALDO said that he had concluded it was better to keep such chemical agents out of the peritoneal cavity and, after wiping off the parts known to be soiled, to rely upon drainage to prevent accumulation of the discharges.

APPENDICITIS COMPLICATING DISEASE OF THE ADNEXA.

Under this title DR. H. C. COE read the paper of the evening. The following points were submitted for discussion:

1. Appendicitis is a frequent complication of inflammatory disease of the adnexa.

2. In most cases it is secondary to some adnexal trouble, a long appendix in contact with, or adherent to the right tube, or ovary being infected by extension through its walls or through the lymphatics.

3. The inflammation of the appendix is usually of the subacute type.

4. In a small proportion of cases the infection extends from the appendix to an adherent tube or ovary, or cystoma.

5. The symptoms of the associated conditions are usually determined by the more extensive lesion, but these are referable principally to the diseased adnexa.

6. The diagnosis is made from the history, the location of the pain (above as well as below the pelvic brim), and the presence of an induration which can be traced from the appendical region downward into the pelvis.

7. In acute cases with an extrapelvic mass the lateral incision is preferable, with subsequent exploration of the pelvis and vaginal drainage if possible. If the abscess is mainly intrapelvic and easily accessible a vaginal section is indicated.

8. In subacute and recurrent cases a median incision is to be selected.

9. The appendix should be removed whenever the abdomen is opened for pelvic disease, with the exceptions noted.

DR. RALPH WALDO said the site of the abdominal incision was of the greatest importance, and his experience had convinced him that the incision parallel to or through the body of the right rectus muscle was better in women than the "gridiron" incision of McBurney, because the pelvis might thus be better explored. He thought it had been customary for nearly all abdominal surgeons in this city to examine the appendix in all cases of disease of the adnexa, as especially emphasized by Edebohls, prior to the mention of its importance by Kelly.

DR. W. S. STONE called attention to that form of appendicitis in which, from the retroperitoneal location of the appendix, the abscess might follow the cellular tissue of the pelvis and thus simulate an extra-peritoneal abscess that is ordinarily of pelvic origin.

DR. H. S. COLLYER expressed his opinion that appendicitis may cause a pyosalpinx, and cited a case in which a left pyosalpinx had apparently originated from an appendicitis in a long appendix. He did not think a normal appendix should be removed during an operation for diseased adnexa.

DR. J. DOUGAL BISSELL stated that it had been his custom to always remove the appendix on opening the abdomen if the conditions were such as to allow of it. He had never found an appendix and a pus tube communicating; but he presented a specimen in which the pus tube surrounded the appendix and was imbedded in the abscess without communicating with it. He always

preferred the median incision for the removal of the appendix if there was a possible complication.

DR. H. N. VINEBERG said that he believed that some cases of appendicitis would cause inflammatory disease of the adnexa, and cited some cases in young girls when there was every reason to believe this had occurred. Although secondary involvement of the appendix was not uncommon he questioned whether the leaving of the appendix when operating per vaginam would cause symptoms, and did not think the point was of sufficient importance as to give up the vaginal route entirely. Dr. Kelly, he said, made no claims to originality, but had simply asked for the experience and opinions of others with regard to the removal of the appendix as are incidental measures in laparotomies.

DR. E. B. CRAGIN said that in cases in which during operation it became necessary to ligature far out in the pelvis sloughing of the appendix might occur, as in a case of his own of intraligamentous tumor, from the shutting off of some of the blood supply. In this class of cases, under such conditions, even a normal appendix should be removed.

DR. G. W. JARMAN said he personally believed in removing the appendix every time one was operating in the pelvis, provided the patient's condition permitted.

Meeting of February 9, 1904.

The President, DR. GEORGE W. JARMAN, in the Chair.

CHRONIC RECURRING CATARRHAL APPENDICITIS.

DR. HERMANN J. BOLDT presented four appendices that he had removed in the interval from patients who gave the typical history of mild attacks of appendicitis at intervals of from three to six months. There was in each case tenderness upon pressure during the intervals. Although the danger from acute perforation in such cases was not great he believed that operation should be performed because of the discomfort, in some cases pain, and to relieve the mental anxiety. He did not think it was advisable, however, to operate during an attack because of the greater risk of infection which even in the catarrhal variety might terminate in septicemia, as illustrated in a case he had seen some years ago, in which the autopsy even gave no sufficient explanation. The careful diagnosis of these cases he considers of great clinical importance.

CHRONIC METRO-ENDOMETRITIS.

DR. HERMANN J. BOLDT presented a uterus showing this lesion that he had removed from a patient, 42 years old, who had been complaining of hypogastric pain, menorrhagia and metrorrhagia.

for five years. The trouble had evidently begun with a septic infection at the time of labor. Almost constant treatment had failed to relieve her, so that vaginal hysterectomy was finally performed. Since then her health had very much improved.

LARGE URETHRAL CARUNCLE.

DR. HERMANN J. BOLDT presented an unusually large specimen of this condition. Excruciating pain during urination, inability to walk, and hemorrhages were the symptoms.

ABSCESS IN WALL OF UTERUS CAUSED BY PUERPERAL INFECTION. VAGINAL HYSTERECTOMY. RECOVERY.

DR. HERMANN J. BOLDT reported the following case: The patient had been confined five weeks previous and, beginning four days after confinement, she had fever ranging from 100 to 102.5 F. There was associated with the elevation of temperature and acceleration of pulse, pain in the left lower abdomen. On the twelfth day a distinct chill of about fifteen or twenty minutes' duration occurred. The temperature after the chill rose to 104 and pulse to 124. There was now tenderness over the entire abdomen, but most marked on the left side, corresponding with a protuberance of the uterus. The attending physician then curetted, with the result that the patient had another chill, followed by a rise of temperature to 106 and pulse to 140. When seen in consultation the patient presented the typical picture of one suffering from a moderately severe form of infection. A blood-culture gave negative results. The usual methods of treatment were followed in the absence of any absolute indication for surgical intervention. When again seen two days prior to operation, the general condition of the patient had become worse. The local condition, however, was not much changed, except that the protuberance previously felt was somewhat larger and more sensitive. The temperature varied from 100 to 102.5, with a corresponding pulse rate. It was evident that the infection came from the uterus, but its exact nature could not be determined; the blood examination was negative. Hysterectomy was determined upon and done two days later. There was nothing unusual about the operation. On delivering the large uterus through the vagina, the forcible traumatism on the prominent part of the organ caused a small rupture in the uterus and the escape of a considerable quantity of pus, about 60 c.c. Improvement began on the second day and the woman made a complete recovery in less than two weeks.

DR. H. N. VINEBERG gave the history of a case similar to that of Dr. Boldt's third case. Sepsis had developed after a miscarriage and a mass appeared in the left iliac region, which was treated expectantly for ten days on account of the danger of spreading the infection. No improvement resulted and an abdominal operation showed there was an abscess in the left uterine horn which contained about two ounces of pus. After opening

the edges were excised and the cavity drained through the abdominal wound. The patient recovered and became pregnant again and was delivered normally afterwards. Hirst and Leopold had reported similar cases. He thought, therefore, that it was best to operate through the abdomen in such cases, in order to save the organs as far as possible.

SUDDEN DEATH SIX DAYS AFTER AN UNCOMPLICATED ABDOMINAL HYSTERECTOMY FOR MULTIPLE FIBROMYOMATA.

DR. GEORGE G. WARD presented the tumors that he had removed from a patient, 51 years of age, who had suffered from menorrhagia for three years, recently of considerable severity. Although anemic and neurasthenic she was of good physique. Heart, lungs and kidneys were normal. A supravaginal hysterectomy was performed with no drainage. Time of operation was one hour and ten minutes. Convalescence was uninterrupted until six days and five hours after the operation when death suddenly occurred, preceded by a few minutes of precordial distress. There was no cyanosis, but well marked twitching of the muscles of the right side of the face.

ADENO-CARCINOMA OF THE UTERUS.

DR. GEORGE G. WARD, JR., presented an example of this variety of new growth that he had removed from a single woman, 43 years of age, who had been bleeding slightly every day for two months. A diagnosis of fibromyoma was made from the hard and symmetrical enlargement of the uterus and a supravaginal hysterectomy was performed. The uterus was opened after the operation and a soft sessile growth was found at the fundus and the entire endometrium was studded with small pedunculated bodies. A microscopical examination by Dr. Brooks showed the growth to be an adeno-carcinoma.

DR. WARD referred to the rarity of this variety of cancer in the uterus and called attention to the importance of opening the uterus at the time of operation, so that the cervix might also be removed if there were any suspicions of malignancy, as recently emphasized by Dr. Boldt.

SUPPURATING FIBROMYOMA.

DR. GEORGE G. WARD, JR., presented such a specimen. He had performed complete hysterectomy in this patient, 60 years of age, XII-para, who had had severe hemorrhages for eight months. Although her condition was poor at the time of operation she made a smooth recovery.

THE PRESIDENT said that, inasmuch as Dr. Ward's second case was the second one in which the knowledge of the malignancy of the growth had been obtained after the operation had been completed, a discussion of the advantages and disadvantages of leaving the cervix might be profitably discussed.

DR. GEORGE T. HARRISON thought if one was sure the cervix

was healthy it should be left, because it would save time and cause less shock.

DR. H. J. BOLDT stated that his only reason for doing a supravaginal hysterectomy was that it left a better vaginal vault. He felt that he could do a total as quickly as a supravaginal hysterectomy with as little shock. In malignant disease a total hysterectomy should be performed.

DR. H. N. VINEBERG stated, in reference to Dr. Ward's case of sudden death following hysterectomy, that such an occurrence might follow less serious operations. Fat emboli, in addition to blood emboli, might occur, as he had known after an appendectomy for catarrhal appendicitis.

DR. RALPH WALDO said that he considered a better vaginal vault resulted from total hysterectomy, which rarely required more than an hour for its performance. Hemorrhage was no more troublesome with one than with the other method.

DR. J. L. RIDDLE GOFFE said he endorsed the suggestion of Dr. Ward that in doing a supravaginal hysterectomy for fibroids the tumor should always be examined before the operation was completed, so as to avoid the danger of leaving a cervix that might later develop malignant disease. Our experience with cases in which cancer of the cervix had developed after supravaginal hysterectomy was necessarily limited. In 1,000 cases reported by Spencer Wells, one developed cancer of the cervix. He had never seen a case in his own experience but, although the danger of such an occurrence might be remote, he considered the measure advocated by Dr. Ward to be safe. He thought removal of the cervix often required additional time in controlling the hemorrhage. He would do it in two stages: first, amputating the uterus at the internal os; second, if examination showed the tumor to be malignant, removing the cervix. The supravaginal operation commended itself because of the saving of time, its simplicity, the smooth convalescence, and the better support of the vaginal vault.

DR. GEORGE W. JARMAN stated that he had not believed the cervix offered any support, as it often came down when the pelvic floor was injured. He could do a total hysterectomy quicker and he was more certain of controlling the hemorrhage, and considered the convalescence as smooth in his cases as in those of other operators in the same hospital who performed the supravaginal operation.

CHORIO-EPITHELIOMA MALIGNUM.

DR. A. BROTHERS presented a uterus showing this form of tumor, that he had removed from a patient, 39 years of age, VIII-para. The last child was born eight years ago. Her previous menstrual history had been normal. Amenorrhea lasting eight months began fourteen months ago and since then menstruation had been irregular, and since the last period there had been more or less constant bleeding, especially upon exertion, which lately had become profuse and attended by lumbar and sacral pain. The admission diagnosis of fibromyoma was questioned when the examination

showed a boggy uterus that was enlarged to about the sixth month of pregnancy. An examination and exploration under anesthesia showed the enlargement to be due to a hydatidiform mole which was then removed. After leaving the hospital the patient remained well for five weeks. Bleeding then reappeared and continued for three weeks. Loss of appetite and emaciation also began. Examination upon readmission showed the uterus to be slightly enlarged. The diagnosis of chorio-epithelioma malignum was then made and an abdominal hysterectomy performed. The uterus, when split open anteriorly, presented on its posterior wall two tongue-shaped protrusions of which the base consisted distinctly of uterine structure. The ovary upon the left side showed a cyst the size of a marble.

DR. HERMANN J. BOLDT.—Lately there has been a change of opinion among some observers regarding the indication for hysterectomy for conditions seemingly chorio-epitheliomatous. This has come about because patients have been reported cured by thorough curetting, in whom chorio-epithelial elements had invaded the muscularis and bloodvessels. Further, uteri from which an examination of the scrapings removed for diagnostic purposes were pronounced to be the seat of malignant chorio-epithelioma, and which were extirpated as the result of such report, were found upon examination to have no vestige of malignant disease in them, as shown by further microscopic examination of the extirpated organ. It has therefore been stated by some that it is absolutely necessary to have positive evidence that a given specimen is one of malignant chorio-epithelioma, and not a benign chorio-epithelioma. We have no report of what the histological findings are in Dr. Brothers' specimen. Macroscopically the neoplasm invades the wall of the uterus, although only to a slight extent. My position is this: While we know that benign chorio-epithelial proliferations, even excessive at times, are not of rare occurrence, especially in instances of molar pregnancy, yet we do not possess any positive means of differentiating the benign from the malignant form in the early stages. It would, therefore, be unjustifiable to rely entirely upon the microscopical findings. On the other hand, I would not likely sanction the extirpation of a uterus in a young person without some knowledge of the pathological condition as revealed by the microscope, the examination being made by a competent pathologist. If the curette brought forth large areas of irregularly interwoven structure of ectodermal and syncytial cells from the uterus which had a short time previously been the seat of pregnancy, either true or molar, especially, however, the latter, I would not hesitate to remove such uterus. This would particularly hold good in a woman who had had a number of children. In other words, there are instances in which we should place as much value on the clinical picture as upon the microscopical findings, in fact at times more, the same as in frequently recurring adenoma of the endometrium. If, after an abortion, or the expulsion of a mole, the uterus was known to

be empty, and then several weeks later the woman commenced to bleed, and an examination of the interior showed a neoplasm which, under the microscope, gave a picture as I have described, it would be an indication for me to do a hysterectomy. There is no more fatal disease than chorio-epithelioma malignum, hence it is necessary to operate early if a favorable result is to be achieved; yet, on the other hand, I do not believe that uteri have been extirpated in this country just as well as abroad, which were in reality not the seat of a malignant neoplasm, as was thought to be the case by the operator. I myself have saved three young women from having the uteri extirpated, the would-be operator believing them to be malignant deciduoma.

A POSSIBLE TERATOMA DEVELOPED IN A CYST OF THE BROAD LIGAMENT IN CONNECTION WITH A DERMOID CYST.

DR. J. RIDDLE GOFFE.—Through the courtesy of Dr. James P. Tuttle I have the opportunity of presenting quite an unusual specimen. It consists of a tumor of the broad ligament, and its gross appearance simply represents the customary contour of such a tumor, with a large portion of the broad ligament and the Fallopian tube attached. Upon examining it more closely, however, we find that the tumor consists of two distinct portions, one cavity being surrounded on one side by the external wall of the tumor proper, the balance of its sac being made up of the interior of the broad ligament. This was full of blood and was evidently produced by a hemorrhage into the broad ligament. The other portion has a distinct sac-wall, and upon inverting it we find attached to its lower segment this peculiar growth. The sac proper contained originally a large quantity of emulsified fat and a firmly matted coil of hair, which is shown here. The growth, as you see, measures six inches in length, and has the general appearance and contour of a human monstrosity. It is without a head, but at the shoulders is attached a sac-wall, and now that it is inverted the sac seems to provide a hydrocephalic head. Where the shoulders and arms would naturally appear, we have two prominent buds. The trunk resembles in contour closely that of a child, but at the seat of the coccyx we have quite a projecting tail. The whole object terminates in an extremity, which we can easily imagine might be made up of the two lower extremities coalesced into one with a strong flexure at the knee, the tip terminating in a large toe, which is provided with a very well defined toenail. The whole growth, as you see, is covered with well organized, tough skin, with discrete hairs about one-quarter of an inch long growing all over the surface. Springing also from the junction of the sac-wall with the body we have a long tuft of hair of a grayish color, about three inches in length. The gross resemblance of this object to a human monstrosity suggests the possibility of its being a teratoma. It is undoubtedly associated with a part of a dermoid cyst. The question, of course, is purely one of histology, and can only be settled by a careful and intelligent dissection at the hands of a pathologist. This

we will have done in time for a future report. According to Bland Sutton, "a teratome is an irregularly shaped tumor which, on dissection, contains a few vertebræ or processes of skin resembling digits, associated with a piece of intestine or an imperfect liver. It is a supernumerary fetus. It is usually attached to an otherwise normal individual." Usually a teratoma is attached to the external surface of an individual as a parasite, but from the supposed origin of a teratoma I see no reason why it should not spring from any part of the anatomy. The theory of the development of a teratoma rests upon that by which we explain the existence of conjoined twins, supernumerary limbs and acardiac fetuses. We know that in both the animal and vegetable kingdoms a single ovum gives origin at times to two embryos. These embryos may be entirely separated and give us distinct twins, or the separation may not have gone to the complete extent, giving conjoined twins, or the separation may have been so unequal that one embryo takes all the nutrition and development, while the other hangs upon it as a parasite, and so, lacking in development and being dependent upon the more complete individual, becomes what we know as a teratoma. In many species of animals there is a strong tendency for the extremities to bifurcate. This results, in the hands and feet, in supernumerary fingers and toes. Should the bifurcation or dichotomy extend to the axis of the limbs supernumerary legs develop. In cases in which the bifurcation or dichotomy affects the upper pole of the body it results in supernumerary heads and so on. This specimen may simply be the ordinary products that we find in a dermoid cyst, but its gross appearance suggests that of a teratoma and we will leave it for the pathologist to decide. The specimen was removed by Dr. Tuttle through the posterior vaginal fornix, but the history of the case and the description of the operation I will ask Dr. Tuttle to narrate, as he is present with us to-night.

DR. JAMES P. TUTTLE (guest).—I was called to see this case for intestinal symptoms. The patient was a young girl whose first symptom was pain when the bowels moved. She was given some laxative, but it had not acted and the pain was intense. The doctor could feel nothing on the next day, but a tumor was noted in the left inguinal region. She was given an enema and, three or four hours later, when I saw her the tumor had increased to twice its size. I examined her and found a tumor in the left inguinal region. The rectum was ballooned in the same way that one finds it in intestinal obstruction. The lump was nodular and I thought it might be hard fecal masses in the sigmoid flexure. I could feel at the same time some fluctuation through the rectum and also through the vagina. She was then sent to the hospital. On the way she passed some gas from the bowels and then the pain ceased. On the following day her temperature was 101, her pulse rapid. The fluctuating mass almost occluded the rectum and so it was decided to operate. What was supposed to be a hematoma was found in the posterior cul-de-sac. Going through

the vagina I opened a large sac filled with clots. After removing this a tumor came down, which still fluctuated. An incision was made into the mass and about half a pint of pure, creamy-looking material which I thought to be pus was evacuated. On further examination the fluid was found to be liquid fat. The two sacs and the tumor contained in the inner one is shown in the specimen. I passed my hand around the tumor and broke up the adhesions and delivered it through the small incision in the posterior cul-de-sac, without any hemorrhage, although I feared there would be considerable. We took some of the gauze packing out four days later, and to-day I removed the last of it. It was scarcely stained with blood. At the time of operation the temperature was 101 and the next morning it dropped to normal and has been so since. Eight hours afterwards the bowels moved without the use of a laxative and she has not needed anything to move the bowels since, notwithstanding the fact that she has always been constipated.

Teratoma is defined by Foster as an inclusion which may occur anywhere within the body and may be found at the time of birth. This thing that has been presented is probably a mixed or complex form of teratoma in which there are evidences of a dermoid cyst in the bunches of hair, etc. There is such a specimen described in the Handbook of Medical Sciences. Whether these buds are beginning arms, or breasts, that can only be told after dissection. The instances in which there are evidences of both dermoid and teratoma in the same tumor are rarely seen. It is a right sided tube torn off with the mass and the tumor was upon the left side; how it got so mixed it is hard to understand.

DR. F. FOERSTER narrated a somewhat similar history of a young woman, in whom he found an ovarian cyst with twisted pedicle. It was a multilocular cyst containing a dermoid. An effusion in the cyst proper had occurred.

TUBAL PREGNANCY.

DR. A. B. TUCKER presented three specimens demonstrating the difference between tubal abortion and tubal rupture. (1) A ruptured tube with placenta and membranes of a four and one-half months' pregnancy. (2) An example of tubal abortion he had removed from a patient, 30 years of age, whom he had treated for gonorrhea and specific disease eight years ago. She had had one child eighteen months ago. The specimen showed a mass just at the opening of the fimbriated extremity. (3) The patient, 27 years of age, had been treated six years before for a pelvic exudate following a miscarriage. She had had one child two years before. The specimen showed an enlarged tube with the distal end very much dilated. Numerous blood-clots were found in the abdominal cavity. From an examination of these specimens he concluded that there was always an effort on the part of the tube to abort and only ruptured when there was a stricture.

TRANSACTIONS OF THE CHICAGO GYNECOLOGICAL SOCIETY.

Stated Meeting, February 19, 1904.

The President, EMIL RIES, M.D., in the chair.

OVARIAN PREGNANCY.

DR. CLARENCE WEBSTER exhibited a series of microscopic drawings of a case of ovarian pregnancy which he reported at a previous meeting.

DR. JOHN G. CLARK of Philadelphia, Pa., read a paper, by invitation, entitled

UNSETTLED QUESTIONS IN ABDOMINAL SURGERY.¹

DR. FERNAND HENROTIN.—We have reason to be thankful to Dr. Clark for calling our attention to some interesting questions in connection with abdominal surgery. There are certain rules which the essayist did not dwell on quite enough in regard to systematic exploration. It is the pride of modern gynecology that we strive to make small incisions, in order to create as little shock as possible; therefore, it becomes a matter of considerable importance as to how much we endeavor to do through these incisions. If we have a small incision, and wish to make a systematic examination of the points brought out by the essayist, we must enlarge it. This is sometimes undesirable, because a short incision is of considerable value in a certain class of patients.

With reference to the appendix, there is hardly an incision that is made for ordinary laparotomy in which exploration of the appendix is not reasonably easy. When operating for intra-abdominal pathological conditions, I have made it a rule (and we are here to compare notes, because it is a mooted question) to always remove the appendix unless there were definite reasons why this should not be done. Of course, there may be reasons why we should not remove it. The patient may be greatly exhausted; the appendix may be clearly out of reach. When operating for a replacement of a retroverted uterus, sometimes we would not feel warranted in making the incision considerably longer to look after an appendix that had gone upwards and behind the cecum and was difficult to reach.

All of us agree with the essayist as regards the frequency of lesions. The man who keeps a proper record of his cases, who has all of them properly analyzed, who has his specimens examined in the laboratory by a competent pathologist, who is always watching and determining his cases to the end of a complete examination,

¹See original article, page 577.

does not fail to recognize a lesion of the appendix, even though it is not visible to the naked eye. Two-thirds or three-quarters of all appendices are more or less diseased. It is now some three or four years since I began to remove the appendix in almost every case unless there was a contraindication. My determination came about from operating two different cases of appendicitis (acute) in women in whom I had performed laparotomy before. In one of these cases I remember distinctly of having had the appendix within my fingers, and looking at it I was in doubt as to whether I had better remove it or not. I did not do so, and in about two years she had a rather formidable attack, which, however, terminated favorably. It was a gangrenous appendicitis, and I felt that I ought to have removed it when I had it in my hand before.

As regards the examination of the gall-bladder, the same rule should guide us. There is a great deal that can be said with reference to the incision in these cases. If we make a low incision in a patient with a redundant, very stout abdomen, it is not an easy matter through a small incision to reach the gall-bladder and to squeeze out its contents so as to determine the patency of the cystic and common ducts; to palpate for gall-stones in stout women through a short incision, always to a certain degree increases the danger. Generally speaking, we would agree with the essayist that where an examination can be made which will enable us to reach the gall-bladder without difficulty, we would feel inclined to follow his advice, and we are thankful for the results of his examinations based on his experience.

With reference to nephrorraphy, that operation has been very much abused. The question as regards the exact symptoms of movable kidney is not settled. The natural mobility of the kidney has not been exactly solved. The method of measurements which the essayist gave us, I should think would be unreliable. We can estimate reasonably well the amount of mobility in a kidney that is movable, but not so well by the method he has described.

We have not yet found a perfect operation for movable kidney. When we consider the fact that the symptoms ascribed to movable kidney are so frequently simulated by conditions not due to the kidney, we should always look upon interference in these cases with a good deal of doubt.

In regard to enteroptosis, we have the same difficulty to contend with as in movable kidney. We have no well-defined symptoms. Even after the exploratory incision has been made, it is extremely difficult to tell what those symptoms mean. The exact location of the transverse colon and the stomach in such cases may be simply accidental, and not permanent, and, as pointed out by the essayist, we have no very certain means of putting the organs in perfect position and having good functional results follow.

One subject merely referred to was palpation of the ureters for kidney stone. This can be accomplished comparatively easily if the incision is sufficiently large. The essayist referred to it, and undoubtedly does it. I was led to make a note of this as one

of the points for discussion simply because it happened to me about three years ago to have a case upon which I operated (a woman) for chronic appendicitis; I removed the appendix, and after having removed it the patient still suffered from pain, and eventually I discovered that the ureter had become completely blocked and the kidney infected. I opened the kidney and removed a large renal calculus. It was a mistake in diagnosis, but still exploration at that time would have solved the problem. This case leads us to recognize the importance of a preliminary investigation of all the symptoms and the history of each and every case. If there is a single fault I have to find with gynecology of to-day, it is the constant habit of being guided entirely by the objective symptoms of the patient, and not paying enough attention to the history and symptoms. Very much more can be found out than one supposes in cases of so-called gynecological or abdominal interest by a careful investigation of the history, which will show us in which direction to look, so that our cycle of examination need not be too severe or too prolonged.

I am sure I represent the Society in thanking Dr. Clark for his timely exposition of this subject, and personally I thank him very much for the pleasure of having heard him.

DR. L. L. McARTHUR (by invitation).—I am pleased to observe a very decided conservatism in all the statements Dr. Clark has made.

To follow consecutively each of the points emphasized, I would say with reference to the appendix, I believe a good many accessible appendices may still be left in the abdomen at the time of operation for some other trouble; that where it is accessible, and where there are no contraindications, on account of the condition of the patient, it may be removed.

As to the removal of gall-stones at the time of operation for pelvic troubles, I believe some little further conservatism should be exercised in that particular instance than in the case of the appendix, for it is possible to have far more trouble from a gall-bladder from which stones have been removed through a simple incision than it is from the ligation of the appendix, and I believe that with a larger number of gall-stone operations made after this method (suprapubic incision) there will come a mortality which will tend to check the removal of gall-stones when one operates for a pelvic pathological condition. It is not an easy matter to determine whether the gall-bladder contents are septic at such a time or not. It is not always an easy matter through such a small wound as was suggested to suture the gall-bladder without the risk of the occurrence of leakage and suture infection. It only demonstrates what has long been known, that from five to nine per cent. of all adults have gall-stones that are symptomless, and to argue that they should be removed when operating for other intra-abdominal conditions is perhaps going a little too far. However, the knowledge thus obtained, and which may later be utilized, is certainly very desirable, and the possibility of removing the gall-stones

at a future time with possibly less risk is to be considered before deciding as to that operation.

I was pleased to hear what the essayist had to say in regard to unnecessary suturing of movable kidneys, and that a halt has been called by gynecologists who have been the chief sinners in this line.

I have profited much by this paper. I feel it is one of the best I have heard presented at this Society.

DR. GUSTAV KOLISCHER.—In regard to the regular gall-bladder operation which the essayist recommends, I should like to say that we would be justified in doing this if this interference would not materially enhance the danger of the operation, and if the removal of gall-stones would actually insure a permanent cure. But quite often the concrements are removed and the conditions leading to all the trouble are not changed whatever. The considerable danger of gall-bladder operations has already been mentioned by McArthur.

With reference to floating kidneys, I am certainly very much pleased to hear an Eastern man recommend so much conservatism as to nephropexy. McArthur said he was glad to hear the essayist express conservatism in this regard, as gynecologists have been the principal sinners in this direction. I would like to state that these men who sinned so extensively in this direction and still try to persuade others to do the same thing, have never been recognized as gynecologists, at least not after our conception of this term.

One of the most interesting points in Clark's paper was his reference to enteroptosis. It is, of course, necessary to distinguish between true enteroptosis, in which the main feature is the disturbance in the intra-abdominal equilibrium, and the dislocation of intestines by the influence of adhesions. Of course, if the latter be the case, we are justified in severing or extirpating the guilty strand, thus allowing the intestine to return to its proper place. But it is different in true enteroptosis. If we try to suspend a lowered intestine by attaching it to certain fixed points inside of the abdominal cavity, or, if we try to elevate the intestine by shortening the mesenterium by doubling it up, or by similar procedures, we practically supplant one pathological condition by another. We produce adhesions and we know that adhesions will interfere with the function of the bowel, although we are not always in a position to give a satisfactory explanation for this occurrence. Furthermore, the statistics concerning enteroptosis operations show, as recent publications demonstrate, that practically all of these operations have been failures. One thing which wasn't considered in the paper and in the discussion is hysteria. If you will examine all your gynecological cases, and all patients suffering from supposed enteroptosis you will be surprised how many patients are suffering from true hysteria. A great number of cases of constipation, so-called ovarian neuralgia, and supposed enteroptosis, are nothing but different expressions of hysteria. If

the latter condition be improved, all these symptoms will disappear.

There is another good point in this paper, that is, that the author issues a warning to make a thorough diagnosis in all cases.

DR. JACOB FRANK.—Will Dr. Clark tell us whether he would consider it justifiable to reverse the condition of things; that is, if you are operating for gall-stones or any condition above the plane of the umbilicus, would you stick your hands into the pelvic region and examine for diseased organs there, and finding any, remove them?

DR. J. CLARENCE WEBSTER.—I should like to refer to the question of examination. I judge from the remarks of Dr. Frank that he is critical of Dr. Clark's procedure. I have for five years been carrying out a routine examination of the abdomen through the ordinary infra-umbilical incision. I do not know any objection to making such an examination through the opening made above the umbilicus. I have usually made a systematic examination through such an incision in the absence of infection, and I have gained much information. It is valuable as establishing a means of criticism of one's diagnostic ability. Dr. Henrotin seems to think that this opening requires to be very large. My forearm is not large, and the ordinary three-inch incision can be stretched to admit the arm sufficiently for exploration of the whole abdominal cavity.

Before sitting down, I wish to say that such a paper as this gives the quietus to enthusiastic advocates of vaginal operations. When we bear in mind the frequency with which various disturbances are found in women, *e.g.*, appendicitis, prolapse of the sigmoid flexure, transverse colon, stomach and other viscera, varicocele in the broad ligament, gall-stones, etc., it is certain that the gynecologist requires to do more than study the genitalia only. The incision which offers facilities for the direct examination of the abdominal viscera is the one which is likely to be of the greatest advantage in operating.

DR. CLARK (closing discussion).—I am pleased that these discussions have been discussed, for, as the title of my paper would indicate, they are unsettled surgical problems and, while I have more or less fixed opinions on the most of them, I felt sure that I would not only profit greatly by the discussion but would also see the matter from other surgeons' view-points.

Relative to the length of the incision, I do not agree entirely with Dr. Henrotin, for the hand may be inserted through a very small abdominal incision. However, I unhesitatingly grant Dr. Henrotin's objection to the routine examination in every abdominal case, for in many instances there is no indication whatever for this procedure. As I have brought out in my paper, this examination must be dictated by surgical judgment and is not subject to a rule-of-thumb. Given, for instance, a suppurative lesion within the pelvis, it would be a bad surgical policy to carry out this routine examination unless symptoms pointed so very

urgently to other abdominal organs as the seat of lesions as to make this examination clinically imperative. The chief finger-board pointing to a given abdominal organ as the possible seat of lesion should be the history, but unfortunately at the present day, when we expect the abdominal incision to reveal all things, the minute systematic details or vague complaints are many times overlooked after having obtained the chief symptom. This I have noted in several instances in cases of cholelithiasis associated with some pelvic lesion. The resident physician will usually secure a satisfactory history of the pelvic lesion, but fails to go fully into the vague attacks of abdominal pain or indigestion which might, if fully elicited, bring out more or less characteristic evidence of the presence of gall-stones. Thus in several instances after an operation, in which gall-stones have coincidentally been found, which had apparently never given rise to any symptoms, on carefully revising the history certain vague points have been closely inquired into and have explained without question symptoms which, previous to the operation, had been attributed to the pelvic lesion. Therefore, I would reiterate what I have said in my paper, that if the pelvic diagnosis is altogether positive and there is no symptom of other lesion within the abdominal cavity, then a cyclic examination should be omitted. But, while the pelvic part of our equation may be positive the patient, nevertheless, may suffer with more or less vague pains in the right side, which may arise from the gall-badder, from the kidney, from varicose veins, or from the vermiform appendix. It is for the purpose of clearing up all of these vague abdominal cases that I have systematically followed in all cases of doubt, where there was no surgical contraindication to its institution, this general examination of the abdominal cavity. In this way many cases have been entirely cleared up and the history which, previous to the operation, was in some points vague, has been perfectly dove-tailed into the results of the examination.

Relative to the removal of gall-stones which are not producing symptoms, I am delighted to have Dr. McArthur's expression of opinion. His experience as a general surgeon has been so extensive that I should naturally lay great stress upon his clinical judgment. From my own experience thus far, my answer to the unsettled question, Should gall-stones be removed if they are not producing symptoms? is positive, although further experience may prove that Dr. McArthur is right. I can hardly agree that it would be wise to leave a number of stones in the gall-bladder when the abdomen is already open for another condition, and wait for them to produce symptoms before the operation for their removal is instituted. While it may be said that considerable proportion of gall-stones may not give rise to classical symptoms, nevertheless I am certain that many so-called attacks of gastralgia or indigestion, which are frequently noted in these cases, are unquestionably due to these foreign bodies and not to any functional or inherent disturbance of the stomach. Another very

strong argument, so far as I am personally concerned, in favor of this policy, is the two fatal cases to which I have alluded in my paper. In both of these I am certain that had this routine examination been made at the time of the primary operation, both lives might have been saved. When I take into consideration the fact that thus far I have seen perhaps twenty-five cases, counting those in other hospitals outside of the University Hospital, which have been operated upon, and have never had a fatality or any serious complication arise from a coinciding gall-stone operation, I can see no clinical reason for altering my position.

In answer to Dr. Frank's question of whether, in the event of the incision being made for some condition in the upper part of the abdomen, this cyclic examination should be made to discover lesions in the lower part of the abdomen, I would say that the possibilities of a satisfactory examination are decidedly limited.

From the lower portion of the abdomen it is easy to bring into view the appendix, to accurately study the position of the transverse colon and sigmoid flexure, and to palpate the gall-bladder. With an incision above, however, unless it were greatly enlarged, it would be impossible to inspect the appendix or to determine with any degree of accuracy the relative positions of the abdominal viscera. As for the pelvic organs, I believe a careful bimanual palpation through the vagina or rectum would more satisfactorily define any pathological lesion than would this examination from an incision high up in the abdomen.

Relative to Dr. Kolischer's criticism of the suspension of the sigmoid as substituting one pathologic condition for another, I believe if Dr. Kolischer will look up his anatomy carefully he will correct this expression. While the sigmoid flexure is suspended by a mesentery the splenic flexure of the colon itself is anchored against the posterior abdominal wall and usually has no mesentery. When it has a mesentery it usually is the result of ptosis and, therefore, to replace the colon by stitching it back and promoting adhesions to the abdominal wall does not, as said by Dr. Kolischer, substitute one pathologic lesion for another. The operation which I have suggested for this correction of ptosis of the sigmoid flexure is merely to promote adhesions between the redundant portions of the meso-sigmoid and the point of its original attachment in the loin. Therefore, if we succeed by the operation in securing the sigmoid in this new position we have restored it to the normal. To criticize still another statement of Dr. Kolischer's, I would ask if he finds the transverse colon occupying a position in the pelvis, in other words, if it is prolapsed from a transverse position above the umbilicus until it has really become a pelvic organ, is he going to leave it there because he does not want to substitute one pathologic lesion for another? I believe there is no greater error into which the surgeon or physician may fall than to attribute many of the vague and especially the well-localized abdominal symp-

toms to hysteria. I am convinced that this diagnosis carries with it infinitely more danger than does the attempt to explain the so-called hysteric symptoms upon evident pathologic grounds, with some systematic attempt at its cure. Therefore, I should say that the replacement of the transverse colon to its normal position and its fixation by a transverse set of sutures, attaching the gastro-colonic omentum to the anterior abdominal wall, carries with it far less of ultimate danger and possible chronic invalidism than to leave the colon thus dislocated within the pelvis.

Relative to the suggestions which have been made in my paper, they must be carefully regulated by surgical judgment. To make this cyclic examination, beginning with a pus-laden pelvis and extending up into a healthy peritoneal area, to enlarge a small incision when there are no symptoms referable to any other organ, or to unnecessarily prolong the operation when the patient is in a critical condition, would be evidences of very bad surgical judgment. To emphasize my position, therefore, I would say that the examination should invariably be made in cases where, as I have stated in my paper, the positive side of the diagnostic equation is well defined, but where there are symptoms which cannot be entirely accounted for without reference to other abdominal organs.

R. W. HOLMES,

Editor of the Society.

TRANSACTIONS OF THE WOMAN'S HOSPITAL SOCIETY.

Meeting of February 24, 1904.

The President, J. RIDDLE GOFFE, M.D., in the chair.

DR. BAKER (of Boston).—I had a case two or three weeks ago that showed the frequency with which we may unexpectedly find some complications with the appendix when we are searching for pelvic disease, and another the efforts that nature may put forth to protect itself against the inroads of appendicitis. This was a case of chronic appendicitis with adhesions to the distal third of the Fallopian tube. I thought it would be of interest from a pathological point of view to remove the appendix and that portion of the tube attached to it without disturbing the adhesions. The report of the microscopist shows it was so. He made longitudinal sections through the adhesions and through the tube and its attachment to the Fallopian tube. I wished this done because I recalled a case in which the appendix was attached to the tube, where there was distinct evidence of a lumen from the appendix into the tube, the discharge finding exit through tube and uterus.

The report of this case is as follows:

Clinical Features.—Falling of "womb" for twelve years—somewhat better after marriage and abortion, but much worse

since baby was born. Cured three years ago and better for six months. 3 attacks of "cholera morbus" 12, 2-3 yrs. ago (when pregnant), and last summer. Describes it as "inflammation and soreness all thro' bowels"—had to go to bed each time. Uncomfortable, rather gnawing feeling, in rt. side a good many years.

Menstruation.—13, reg., some irregularity since birth of child, very little pain, 3 days, 3 naps., last Jan. 24.

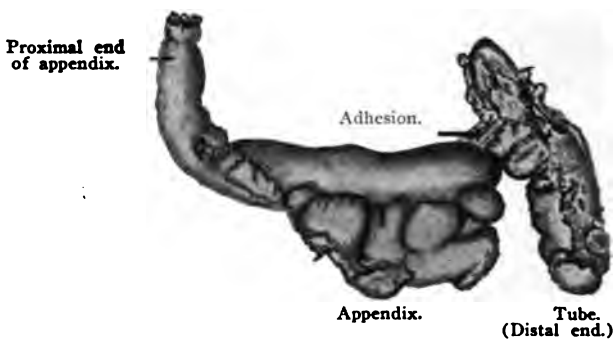
Leucorrhoea.—Always has some on exertion not foul, non-irritating.

Heart.—Slight systolic murmur at apex, has had some swelling of ankles, hands and eyes.

Pelvic Examination.—Lacerated cervix and perineum, retroversion.

Operation.—Salpingo-appendectomy, trachelorrhaphy, perineorrhaphy, Suspensio Uteri.

Appendix $6\frac{1}{2}$ cm. long, 1 cm. in diameter. On section it is apparently normal, although walls are quite thick it does not ap-



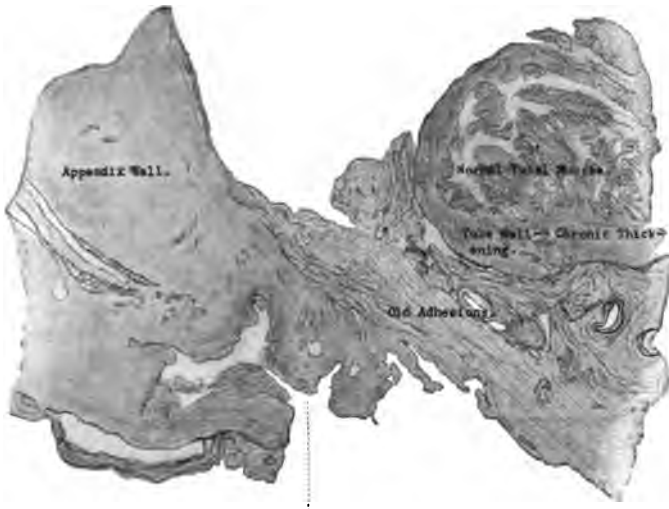
pear to come from induration. Considerable development of fat in mesoappendix. At the tip of the appendix the uterine tube is firmly held by a short, cylindrical stalk of old adhesions which come from the tube near its proximal end. Externally the outer surface of the tube is covered with old adhesions. The fimbriated extremity of the tube is nearly sealed up, but not completely.

On section the walls are boggy and appear to be thickened by increase in fibrous tissue and are more or less hemorrhagic. Tube measures $3\frac{1}{2}$ cm. in length x 8 mm. in diameter.

Microscopically, sections of the appendix show that it is almost entirely obliterated, having only a very small lumen proximally or none at all all more distally. The submucosa is markedly thickened with old fibrous tissue and infiltrated with small round cells both diffusely and focally. The walls of the blood-vessels are thickened with old fibrous tissue that has become almost hyalin. The muscular coats are almost normal. The serosa is slightly thickened and very fibrous.

Sections of the tube show that it is almost normal as to its

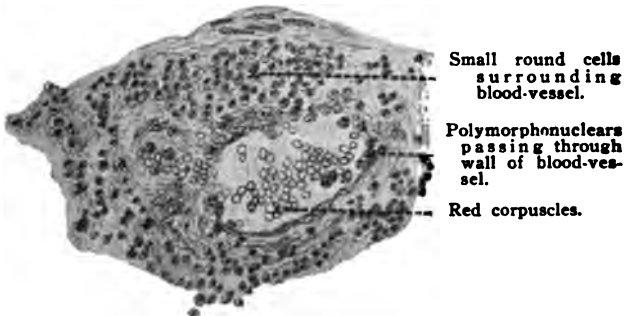
mucosa although the blood-vessels here are sclerotic and engorged with blood. The peritoneal coat is much thickened, slightly edematous and markedly infiltrated with small round cells and



Tip of appendix infiltrated with small round cells and with coagulation necrosis, and perforated.

Section through tip of appendix and uterine tube at point of adhesion.

some polymorphonuclears and this infiltration is especially grouped about the blood-vessels, the latter being engorged with blood having a large proportion of polymorphonuclears.



Section through blood-vessel in wall of uterine tube.
(Distal to appendiceal adhesion.)

Sections of the curettings show that there is a very slight increase in the tortuosity of the glands and some hypertrophy, although it is not typical. The stroma is quite edematous, but otherwise both the stroma and glands are normal.

DR. BROWN.—The report shows the importance of thorough pathological examination of all specimens removed. In listening to it I have been impressed with the importance of working through the abdomen in all right tubal cases and not through the vagina, on account of the possible involvement of the appendix.

DR. BACHE MCE. EMMET.—Dr. Baker held that infection is of necessity from the appendix to the tube. I believe it may have been from the tube to the appendix, since the Doctor says the lumen of the appendix is absolutely closed and this perforation is at the extreme tip. When it becomes obliterated, the closing is from the tip upward toward the proximal end of the appendix. I think possibly the infection was from the tube itself, which in clearing up emptied through the appendix, the latter becoming sealed later. The mucosa was healthy but it may readily become so once the contents are expelled.

DR. GOFFE.—In the description of the adhesions, Dr. Baker said the tube was not entirely occluded; evidently did not give evidence of being very much diseased. This affords decided indication that the disease originated in the appendix.

In regard to the custom of removing the appendix in all cases where the abdomen is opened, I believe the profession is not agreed. I have not found the appendix involved so often with diseases of the uterine adnexa as a number of men have reported, so I have been surprised that so many have resorted to removal of the appendix in all cases where the latter are affected. I think the time has not yet come to adopt that as a universal rule.

DR. EMMET presented the following specimens:

**FIBROID UTERUS AND FIBROID POLYP FROM FUNDUS OF THE UTERUS
WITH MALIGNANT DEGENERATION ABOUT ITS BASE.**

Miss G., aged 37. Large woman, fine color, well nourished. Hemorrhage, leucorrhea and pain for a year or more. Removal of the uterus with a portion of cervix, also appendages, per abdominal incision. Having left a portion of the cervix and later finding the condition here described, suggests the advisability of always making a section of the specimen after removal to determine upon complete removal of the whole cervix with a search for diseased glands. Recovery uneventful but for broken down fat.

I think this malignancy has started in the growth in the same way as we notice epithelioma starting by irritation about the cervix after laceration. It must have originated by the polyp dragging upon the endometrium.

**OVARIAN CYSTOMA CLOSELY BOUND TO UTERUS BY THICK ADHESIVE
LYMPH. LEFT TUBE MUCH ENLARGED, COVERING THE TUMOR,
FIMBRIATED EXTREMITY COMMUNICATING BY OPENING OF THE
SIZE OF FINGER-TIP WITH MAIN CYST, THEN DRAINING IT INTO
..UTERINE CAVITY.**

Mrs. R., aged 34, married 15 years. Sterile. Entered Post-Graduate Hospital February 16th. Operated on February 17th.

Menses began at 11. Always regular and normal until eight years ago, when she began to flow every three weeks. Has had leucorrhea for the past eight years. For the past year has been flowing every two weeks and flow has been profuse. Has had considerable pain on left side. Has noticed that abdomen has increased in size. Examination led to diagnosis of fibroma uteri. Upon operation, I found a cystic mass of the size of fetal head at term, closely bound to the top and posterior face of the uterus, adhesions very thick and strong, also a second cyst of the size of a large egg upon the larger one at the left horn. The left tube was greatly enlarged and closely applied over the surface of the tumor, the fimbriated extremity (open) forming part of the larger cyst. Tumor was dissected out and removed with tube one inch from left horn.

The peculiar features of interest in the specimen are its close union with the uterus and the history of metrorrhagia leading to a misapprehension in diagnosis, and further, the direct communication of the open fimbriated extremity of the tube with the cavity of the ovarian sac, thus establishing a constant drain through the uterus. The tube is patent throughout. This offers a form of leucorrhea, which, I believe, is at least uncommon. As the opening into the sac was upon a lower level than the horns of the uterus, the fluid could evidently not pass from it at all times. The sac was extremely tense when removed. It contained a fluid like thin pea soup. I fancy it, transuding, caused active peritonitis. Patient is making a typically good recovery.

DR. GOFFE.—Dr. Emmet's paper shows the importance of examining carefully all specimens in cases of supravaginal hysterectomy before operation is completed, so that the cervix may be removed and a complete pan-hysterectomy done, where there is evidence of cancer in the uterus.

DR. CARMALT.—A gross examination at the time of operation may be a great help, but further work must be done by the pathologist, before one can feel at all satisfied with the results.

DR. BROWN.—The specimen shown by Dr. Emmet appears to be an adenocarcinoma commencing in the endometrium. The pedunculated fibroid does not appear to be involved, nor do the other fibroids in the body of the uterus. The specimen is of the same character as was removed by me from a patient some two years ago. With my patient the diagnosis of malignancy was made from a microscopic examination of the curettings. A complete hysterectomy was done by the abdomen. The patient's recovery was uninterrupted, yet she died within two months from a rapid recurrence of the disease.

DR. BAKER.—In regard to the question Dr. Emmet brought up about irritation of fibroid polypus in the uterine cavity, I had a case some years ago, a polypus the size of a pullet's egg. It was quite free in the uterus. On removal, I found the uterus opposite the point of the polypus had developed malignancy but the polypus itself was entirely free from such degeneration.

DR. GRAD.—The fact that the tube in Dr. Emmet's second case is adherent to the ovary shows there must have been at some time an inflammatory process there. How else could the connection of the cyst with the tube have occurred?

DR. EMMET.—My idea is that this cyst developed between the layers of the broad ligament, thus raising the tube on its surface. The fimbriated extremity grasped the ovary as it does when a follicle matures, and fastened itself by inflammation from material coming from the sac, which by repeated percolation made the adhesion extremely dense.

DR. BAKER.—It is unfortunate that an examination of the contents was not made. The contents, as described, are not unlike those of some cases of dermoid. Knowing the frequency with which these tend to discharge their contents into other organs, it would seem as if the diagnosis of dermoid might have answered in this case.

DR. JAMES N. WEST showed a specimen of

FIBRO-CYSTIC TUMOR.

I operated upon a patient two weeks ago at the Post-Graduate Hospital, when I was somewhat puzzled in regard to diagnosis. She presented a mass that felt very much like a pregnant uterus, six months. It seemed surely to be in the uterus, and I finally made up my mind before operation that we had a fibro-cystic tumor. The cervix was congested, soft and patulous. I passed a sound. It slid up the uterine wall as if sliding by a fetus for 8 inches. I opened the abdomen and got the uterus in my hands; it felt as if pregnant, and had every appearance of such a condition. It was a smooth, uniformly soft uterus, with a feeling of something hard inside of it, occasionally. I felt so uneasy about the possibility of pregnancy, although she had given no such history, that I cut the uterus open before removing, and found a large fibro-cystic tumor in the posterior wall.

DR. GOFFE.—I have had two such cases in which even after I had the abdomen opened and the uterus in my hand, I was unable absolutely to decide whether there was not pregnancy instead of a fibro-cystic tumor. In one during this Winter, I was unable to make a diagnosis until I delivered the uterus through the abdominal incision and examined it in my two hands.

DR. MALLETT.—I can sympathize with Dr. West in his uncertainty. I have seen a most puzzling case at the hospital. The patient had not menstruated for ten months. Had colostrum in the breast, no menstruation, was positive she had felt life. I did not think so and operated; the uterus came up. I was inclined to remove the uterus when the feeling of others present was so strong that the woman was pregnant, that I did not feel justified in doing so, they expressing the belief that they could feel the fetal limbs. I closed the abdomen, intending to wait another month, thinking a mistake might have been made in the history. The next afternoon she expired of pulmonary embo-

lism. I completed the operation in the dead-house. There really was a thin-walled uterus, filled with a fibro-cyst. It was as large as a pregnant uterus could be.

DR. HARRISON.—These cases of fibro-cystic tumor certainly present great difficulty in regard to differential diagnosis. Sometimes the difficulty lies in the fact that a man goes to the examination of a case with prepossessions. I was asked by a physician some years ago to see in consultation a case of myoma. I did not have an opportunity to see this gentleman or to examine the patient, as he asked me to commence the use of chloroform at once. The patient was brought into the operating room half under its influence, then another doctor came and relieved me, and I stood by the operator to see the operation. As soon as the uterus was exposed I was convinced that the uterus was pregnant, and so it proved. The woman died two days afterward. The reason the man made such a diagnosis was that he excluded the possibility of pregnancy because he said he had curetted the uterus and after the curettage the husband and wife had not lived together.

DR. GRAD.—It seems to me if a case is one of pregnancy we should find evidence of considerable enlargement of the round ligament. Whether that would help to decide in favor of the case being a pregnancy or not, I don't know. It simply occurs to me that it might be worth considering.

DR. HERMAN GRAD read a paper

THE THERAPEUTIC VALUE OF ANTISEPTIC ERGOT IN ANESTHESIA
AND SHOCK.¹

DR. GOFFE.—This subject of ergot has been recently brought to the attention of the profession by Dr. Livingstone of Jamestown. Dr. Wiggin experimented with its use in the prevention of gaseous distention following laparotomy. Ergot exercises a stimulating influence upon unstriated muscular fibres, and its action can be explained through that principle. Dr. Wiggin reported that he found patients quite free from distension and flatus, and that his patients were much more comfortable during convalescence with its use than without it. Dr. Alexander Lambert uses it in pneumonia in the alcoholic wards of Bellevue. He asserts that it is very effective in many cases. He is confident he has warded off attacks of pneumonia by the use of ergot hypodermatically. He confirms what he said in previous discussions that in all cases of congestion with threatened inflammation he used ergot beneficially.

He is able to benefit cases of acute nephritis with great promptness by doses of ergot, using it more freely in the wet brains found in the alcoholic wards. He finds that it contracts the blood vessels, equalizes circulation, restores tone, hastens absorption, and will relieve a man from delirium tremens quicker than any other form of treatment. He keeps on giving it until he gets results, and does not care how much he gives. No bad results

¹See original article, page 594.

follow its use. I have used it myself in controlling nausea and vomiting and for relieving pain, nervousness and headache and general conditions following anesthesia. The results commend the drug to me for that purpose. Thirty minims is recommended as the dose. I have given three doses inside of six hours in the cases where I have used it.

DR. CARMALT.—Dr. Samuel W. Lambert used it at the New York Hospital with none of the results his brother had at Bellevue. Seven years ago Pozzi, of France, made a very strong plea against ergot on account of the results on the heart. He said the heart became degenerated. He first objected to it in fibroids. He complained of its influence in laparotomy on patients who had had it. He said the effects of shock were much more pronounced with than without the use of ergot. The French thought shock was due to some previous over-stimulation of the peripheral circulation in nervous storms. I have seen it used with similar results, although I admit we had some very unpleasant failures from its use in the same way.

DR. HARRISON.—The treatment has given me entire satisfaction. The criticisms made by Pozzi are simply based on subjective impressions—his ideas of how it may possibly act internally. He gives no proof. He attributed evil effects to ergot that did not belong to it. It was formerly used in the treatment of myomata. In days gone by Hildebrandt so used it; it is true it sometimes produces necrosis of the tumor. Fritsch reports a number of such cases. I have found, as have Dr. Alexander Lambert and Dr. Wiggins, though I arrived at my belief without knowing their opinions, that the drug is invaluable in intestinal paresis. I have not had much experience in this class of cases, but in those cases where I have used it, I have been much gratified with results. I have found, as Dr. Grad said, it did act on the intestinal canal to produce evacuation. It is known that it has a most calming effect in numbers of cases in which the patient complained of headache. I have had no experience in the treatment of delirium tremens, but I am enabled to believe from evidence that it is useful in those conditions, and I am one of those who esteem its therapeutic value very highly.

DR. BAKER.—I have not used ergot for headaches. In the old days we used it for myoma, and I was then struck with the way different amounts were required to produce uterine contraction in different individuals. I recall a patient where fifteen drops of ergot administered three times a day, on the second day produced such violent pain we had to stop it and give something to quiet the pain and stop its action. At the same time I was using it in another case, where I had given small doses until one-half an ounce of the same preparation of ergot was given three times a day without producing any result.

DR. DONOVAN.—In the latter part of October and during November and the early part of December, we have used ergot. We probably tried it on thirty to forty cases of delirium tremens, and

we found it an absolute failure. We used the preparation put up by Parke Davis. In some cases this dose had no effect; two or three cases we thought grew worse.

DR. GRAD.—Time will settle the question as to whether ergot has any ill effects. Ergotism is produced by giving the drug in large doses. In medicinal doses given for a short time, I do not think any such ill effects would be produced by ergot. It is a question whether ergot administered hypodermically acts differently than by mouth.

As to the vessels of the brain not having muscular fibres to be affected by ergot, would say that there is a question whether the only action of ergot is that of a contractor. It may be a chemical effect upon the tissues themselves. We know ergot acts on the involuntary muscular fibres, but whether a physical or chemical action is also present we cannot say. Not in every case, but in a sufficient number of cases, it will act most beautifully, which justifies its use.

H. GRAD,
Editor.

TRANSACTIONS OF THE WASHINGTON OBSTETRICAL AND GYNECOLOGICAL SOCIETY.

Meeting of December 4, 1903.

The President, J. WESLEY BOVÉE, M.D., in the Chair.

DR. G. BROWN MILLER showed an

ADENOMA-CARCINOMA OF THE UTERUS

and a slide from the same.

DR. H. L. E. JOHNSON read a paper on

A CONTRIBUTION TO THE CLINICAL STUDY OF THE EARLY SIGNS OF
PREGNANCY WITH ONE PATHOLOGICAL SPECIMEN.

I shall confine the province of this paper to the consideration of the diagnosis of pregnancy prior to and including the third calendar month, and describe a physical sign, which, in a very large number of cases, I have invariably noted, and which has been observed only in cases where the diagnosis of pregnancy has been subsequently positively demonstrated.

This sign is observed as early as the fourth week, or possibly earlier, and consists of an intermittent softening and hardening of the vaginal portion of the cervix uteri with, in many cases, a change of color, from a pale violet to the normal pink hue, or the reverse. These changes in consistence and color are rhythmic, more or less. The alternate softening and hardening is easily

detected by digital touch, while changes in color may be seen through a speculum. These signs or processes are, in all probability, early manifestations of what is subsequently recognized as the intermittent contractions of the pregnant uterus, and are probably due to a necessity for some change or modification in the uterine circulation incident to the nourishment and growth of the impregnated ovum through physiologic intermittent congestion of the generative system. I have never observed this sign or symptom in any other normal or diseased condition. I will present brief notes on a few selected cases, which present different features in diagnosis.

Miss —, æt. 23 years, white, menses painful, scanty, irregular, leucorrhea, "Thinks she has womb disease." Missed last period. Examination. Left tube enlarged and tender, uterus anteflexed, size about normal, pin hole os. Sign present. Several observations made. Diagnosis, pregnancy, Confined 230 days after my first examination.

Miss —, æt. 16½ years, white, specific vaginitis (confirmed by stain test), never menstruated, no morning sickness. Examination, sign present. Diagnosis, pregnant two months. Patient claims this impossible, never exposed. Was under observation at times until seven and one-half months. Motion and fetal heart sounds noted. Patient left city for sanitarium. Subsequent history unknown.

Mrs. —, æt. 38 years, white, five children, menses always normal and regular, complains of constant nausea and vomiting. Examination, bilateral laceration of cervix uteri. Uterus enlarged, sign present. Diagnosis, pregnant about three months. Menstruated regularly four succeeding months (altogether including the seventh month). Confined "on time"; labor normal, no hemorrhage.

Mrs. —, æt. 30 years, white, married nine years, four children, youngest three years old; menses never regular; does not remember date of last period; often misses from one to five months. Consumption in family. Claims to have "lost one lung from hemorrhages." Abdomen very large and thinks she has a tumor as "they run in the family." Examination. Abdomen distended with gases; perineum and cervix lacerated. Sign present. Diagnosis, two months pregnant. Patient would not believe diagnosis and consulted another physician, who delivered her "on time."

Mrs. —, æt. 40½ years, white, six children, three miscarriages; menses usually every three weeks, painful, profuse with clots and shreds, lasting from five to eight days. Expected period fifteen days late. Examination. Perineum lacerated, uterus enlarged, prolapsed, cervix lacerated, left ovary enlarged size of a hen's egg, prolapsed and fixed. Sign present. Diagnosis, pregnant between two and three months. Returned in six months, diagnosis confirmed. Lost track of case.

Miss —, æt. 21 years, white, shop girl, health perfect.

menses always normal and regular until after two exposures three months before consulting me. Very nervous, hysterical; has had several convulsions and fainting spells. No nausea or vomiting or other symptoms. Examination. Uterus normal. Sign absent. (Several examinations confirmed absence of this, or other symptoms.) Diagnosis, not pregnant. Patient was sure she was pregnant, though her abdomen did not enlarge altogether or continuously, menses were absent ten months, after that appeared regularly though was pale and scanty, lasting from one to two days. Former period lasted five days and were always free. Last heard from patient three years ago; no change in menstrual function.

Miss —, æt. admits something over 40, white, a typical old maid. Thinks she began to change life at thirty-five. Menses irregular the past year, more or less so for several years. No nausea or vomiting. Has sugar in her urine. Examination. Vaginitis, leucorrhea, pruritus vulvæ, pelvic organs normal. Sign present. Patient denies exposure. Diagnosis, pregnant, about two months. Treatment and examination continued four months, when she admitted promiscuousness for several years past. Confined "on time."

Mrs. —, about middle life, white, married six years, two children, no miscarriage. Menses always regular and normal. Last period twenty days late. Examination, sign present. Confirmed on three succeeding days. Diagnosis, pregnant. Returned to her home, Kansas City, was confined "on time."

Mrs. —, æt. 33 years, white. Menses late fifteen days. Examination, sign present. Confirmed on seven succeeding days. Diagnosis, pregnancy. Confined "on time."

Mrs. —, æt. 35 years, white. One child ten years old. Three years ago was operated upon by me at Providence Hospital for relief of pelvic adhesions, diseased endo-metrium, profuse, painful menstruation, all of several years duration. Recovered promptly. Health excellent, no return of old trouble. Missed February period. Second week in March was stricken suddenly ill with severe pains in pelvis and lower abdomen, bloody discharge and shreds, in small quantity passing from vagina. New York physician consulted, suspected tubal pregnancy. Consulting physician agreed, advising immediate laparotomy. Appointment made with me for operation in Washington, and patient dispatched on night train. Examination on arrival. Uterus somewhat enlarged, fixed, displaced upward and forward against symphysis pubis. No discharge; fluctuating mass, posterior to uterus, no special tenderness on pressure. Sign present. Confirmed by subsequent examination. Diagnosis, normal uterine pregnancy, cystic degeneration of right ovary. Patient and her husband demanded laparotomy, which I performed at Providence Hospital, March 13th last. The uterus was enlarged, soft and symmetrical, displaced upward and anteriorly by a posterior mass consisting of an abscess common to both ovaries. All pelvic

structures intimately bound by adhesions. Both ovaries were prolapsed and adherent to one another, with the tangent walls necrosed, permitting communication with the abscess in either, and forming one common pus cavity, whose walls were the two adherent ovaries. Enucleation ruptured the adhesion between the ovaries, opening the common pus cavity, discharging bad smelling pus. Contamination limited by usual methods. Subsequent surgical history uneventful. Ten days after laparotomy uterine contractions with pains and slight flow appeared, but were controlled by sedatives. Violent uterine action began, resulting in miscarriage. Fetus and a portion of the secundines were expelled and lost before I arrived. I removed the remaining secundines and curetted the uterus immediately, under ether. Patient recovered without complications. I present the pathologic specimens which were removed. Both tubes are normal, while the ovaries present the pathologic condition described. Both ovaries are diseased and not the right one only, as I had supposed.

DR. E. E. MORSE said we all know that it is easy to diagnose pregnancy in the later months, but in the very early months it is hard. It is important because the patients expect it. The books do not give any positive signs in the first four months. Hégar's sign, a compressibility and boggy of the uterus, and the body and the cervix, are apparently separated. Dr. Johnson's sign has to do with the cervix, not the softening, but the change of color seen through the speculum, rhythmically. The intermittent contraction of the uterus is of the body and is felt through the abdominal wall.

DR. H. D. FRY said we were all glad to know of a sign capable of demonstration in the first trimester. Some years ago George Sands counted the pulse of the patient in different positions. Dr. Fry took the temperature of the vaginal canal and reported cases where the diagnosis was confirmed. He asked Dr. Johnson what is the interval between the hardening of the cervix. The sign would be valuable as between a soft myoma and pregnancy. Dr. Fry cited a case where the abdomen was opened by a prominent surgeon, and the fibroid looked so like a pregnancy that she was closed up again.

DR. ABBE asked if the sign would hold good in ectopic pregnancy? The Germans and others, mentioned in Williams' text book, claim that pregnancy can be told by a softening of the uterus and a furrow in the posterior wall.

DR. J. T. JOHNSON said if further experience with other men confirms Dr. Johnson's sign it is a great step in advance in obstetrics. The position taken in the discussion of his paper was, that by bimanual palpation, in the absence of disease, and the presence of the usual signs, a diagnosis can be made.

DR. FRY asked the essayist if he estimated the terms of pregnancy by his sign or by bimanual palpation?

DR. H. L. E. JOHNSON said, in closing, that he does not believe there is any difference in the contraction going on in the

cervix and the uterus, both are the same muscle fibre. He thinks the cervix goes through the same vermicular contractions as the other abdominal organs. His attention was brought to the sign by one day observing the cervix hard and the next soft. The color he thought due to the determination of the blood by the contraction above. The cervix must be softened by the increased blood supply. Any great change like impregnation must have some sign from the first and it ought to be found. He examines a patient and again after five or ten minutes, and if in doubt has her come back on successive days. The color changes in from three to five minutes. Some of these cases he delivered himself, others wrote him the time of delivery. He tells the term of pregnancy by the size of the uterus. In one case he diagnosed pregnancy as early as fifteen days after the menstruation. One case menstruated during pregnancy.

Meeting of December 18, 1903.

The Vice President, ELMER SOTHORON, M.D., in the Chair.

DR. G. BROWN MILLER showed a specimen of an inverted uterus.

DR. W. S. BOWEN read a paper entitled

INTESTINAL OBSTRUCTION FOLLOWING LAPARATOMY.¹

DR. G. BROWN MILLER said adhesions due to the streptococcus do not disappear readily. Gonorrheal, or a mild colon infection, will probably clear up. He thought Dr. Bowen's case was not a streptococcus infection. The character of the infection should be determined before operation, if possible. If it is gonorrheal peritonitis need not be feared, but if it is streptococcic the operation should be deferred until the infection dies out. Dr. Miller spoke of spastic stricture of the ileum in hysterical girls, which disappears on opening the abdomen. Murphy reported a case thought to be due to lead poisoning.

DR. JOSEPH T. JOHNSON commended the essayist on his courage. He was sure some women lost their lives by the surgeon trying to do too complete an operation. Lawson Tait said his success was due to stopping when he was through. In our energy to relieve the patient the operation should not be done too soon, for the bowels will frequently move.

DR. G. D. LEWIS thought drainage caused some of the cases of obstruction.

DR. BOWEN said drainage did not cause the obstruction in his case, as it was too high up.

DR. PRENTISS reported a case of strangulated inguinal hernia at the Garfield Hospital. It was reduced en masse. The man died and a tip of intestine was found adherent to the colon.

¹See original article, page 616.

Meeting of January 5th, 1904

DR. BALLOCK presented a case of

INTUSSUSCEPTION.

Daisy M., a colored girl, 12 years of age, was admitted to the Freedmen's Hospital on the morning of January 15th, 1904, with a history of bowel trouble of some days' standing. Family and personal history unimportant, except for a note that she had always been constipated.

Present illness began on the 10th, after an unusually hearty meal. At two o'clock on the morning of the 11th she was seized with severe pain in the lower part of the abdomen, accompanied by vomiting and headache, and followed soon after by several light chills. Repeated efforts were made to move the bowels by the use of various cathartics and also by enemata, all without avail, as the constipation and vomiting continued without intermission, in spite of treatment, until her admission to the hospital.

Inspection showed a fairly well nourished girl, with the anxious and pinched facial expression characteristic of peritoneal affections. Temperature 100; pulse 154 and very weak and thready; respiration 36. Patient was restless and tossed about the bed constantly. Mental processes confused. Tongue dry and covered with a brown coat. Thoracic viscera normal. Abdomen greatly distended and tympanitic. Liver dullness obliterated. There was a dull area on percussion in the lower right quadrant of the abdomen and a mass could be felt there, although it was not very distinct. Evidences of fluid in the peritoneal cavity. Rigidity of both recti in lower half of abdomen. Acute tenderness in lower part of abdomen, most marked over appendix and cecum. The diagnosis was perforative appendicitis, with purulent peritonitis.

Dr. Ballock saw her at eleven a.m. and decided that the condition was one demanding immediate surgical intervention. She was rapidly prepared for operation, which was begun at eleven-thirty. The incision was through the right rectus muscle. As soon as the peritoneum was opened there was an escape of foul smelling serum and the examining finger came in contact with a mass about the head of the cecum. After a little exploration the appendix was discovered and found to be normal. Further exploration showed an invagination of the ileum into the cecum. The invagination involved both gut and mesentery and was so firm as to resist all safe efforts to reduce it. The small intestines were enormously distended, so much so in fact, that in several places the peritoneal coat had split. There were also two patches of gangrene in the ileum, about a foot from the place of invagination.

In spite of active stimulation and the intra-venous injection

of a quart of normal salt solution the condition of the patient was at this time desperate, so that it seemed wisest to establish a fecal fistula and if the patient lived to do what was necessary at a later date. A knuckle of ileum was picked up and rapidly opened, giving exit to two quarts of fluid fecal matter and thereby rendering the intestines more manageable.

As the first stitch was being placed the patient ceased to breathe and examination showed that she was dead. The ileum and cecum were accordingly removed, constituting the specimen presented. It consisted of the cecum and ileo-cecal valve. Through this opening had prolapsed some fourteen inches of the lower end of the ileum. The prolapsed portion was black and perfectly gangrenous. The ileo-cecal orifice had grasped the intussusceptum firmly, resisting all efforts to release it. There were also numerous firm peritoneal adhesions binding together the parts of the mass. The abdomen contained a quantity of foul-smelling serum.

The history of sudden onset, with chill, headache, vomiting and fever, combined with evidences of peritonitis and free fluid in the peritoneal cavity certainly suggested an attack of fulminating appendicitis, followed by perforation and purulent peritonitis. The obliteration of liver dulness served to further confuse the diagnosis. According to some authorities the presence of this phenomenon is pathognomonic of free gas in the peritoneal cavity, but Dr. Ballock had seen it in several cases besides this one where there was no gas in the cavity. With the other signs of peritonitis, however, it seemed to be confirmatory of the diagnosis of perforation.

This case illustrated many interesting points connected with obstruction of the bowels. In the first place it showed the folly of persisting in the use of cathartics. It seemed that it might be stated as a surgical rule that in cases of constipation, accompanied by vomiting, cathartics should never be given, and that any attempts to move the bowels should be confined to the use of enemas. The giving of cathartics by the mouth only aggravates a state of things which is bad enough at best and the extreme distention of the bowels and paralysis of peristalsis which they cause, strongly militate against the patient's chances of recovery, to say nothing of the hindrance to the operator in his efforts to relieve the trouble. Yet one hardly meets a case of obstruction without the history of futile attempts to move the bowels and of the substitution of one cathartic for another in this attempt.

In the second place attention should be drawn again to the danger of delay in these cases. When we realize the extreme rapidity with which degenerative changes take place in the coats of the intestines when their circulation is obstructed, surely the surgeon is not asking too much when he pleads for an earlier recognition of obstruction by the medical man and an earlier resort to surgical aid, or at least to surgical counsel. Operations upon moribund patients are neither pleasant to the operator nor

gratifying to the patient, as a rule. In every case of even probable obstruction delay is dangerous and often worse than dangerous.

With reference to the purely technical features of the operations for the relief of obstruction Dr. Ballock thought it necessary to be on our guard lest we endeavor to do too much. In the cases of early operation one is justified in trying to do a complete operation. In the late cases, where the patient's life hangs by a thread, the aim should be to save that life by the most rapid operation that we can do, consistent, of course, with the safety of the patient. In the present case, for instance, it was better surgery to try to establish an artificial anus and thus relieve the patient in the quickest way possible from the most dangerous feature of her trouble, viz., the obstruction, than to endeavor to do a resection or any other time-consuming operation at the expense of the patient's vitality.

Incidentally, also, this case demonstrated the value of the intravenous use of salt solution. The pulse gained remarkably in strength and volume under its use, but, unfortunately, the gain was not lasting.

DR. C. S. WHITE read the essay of the evening. Title,

IODIZED CATGUT.¹

DR. STONE stated that he has been pleased with the use of the catgut prepared in this way. He tried it soon after the publication of Dr. Senn's article on the subject. He thought Dr. White had given only a very modest statement of its merits. He liked the method because it is so simple and is free from the risks of the cumol and alcohol methods. He stated that he had given it up temporarily until it could be further tested.

DR. BALLOCK stated that he had used it in three or four instances and was pleased with it. It ties well. The question was would it be safe in the larger sizes of catgut. In the latter the outside of the material is at times sterile and the interior not. It illustrated the difference between laboratory and clinical tests. Iodoform was a good clinical and a poor laboratory germicide.

DR. CARR had observed Dr. White's methods. He thought the retention of iodine in the catgut beneficial, as it would prevent the reinfection of the catgut at times. By sewing catgut through the skin it might be reinfected and it was difficult to handle suture material without infecting it, especially where much catgut was kept in a receptacle. The only time he used the iodized gut it proved to be weak.

DR. G. BROWN MILLER stated that the simplicity of the method of preparing the catgut was greatly in its favor. The only questions were as to the certainty of sterilization and the strength. Chemical sterilization was notoriously uncertain. Most methods of chemical sterilization of catgut had been shown by laboratory test to be imperfect. Enough of the chemical was usually carried

¹See original article, page 605.

over into the culture medium in the tests to inhibit the growth of the spores present. When the germicide was neutralized the spores would at times develop. The spores of anthrax were very resistant to the action of germicides and as anthrax was found at times in commercial catgut one should use every precaution in sterilizing it. Heat so far has been the only method above suspicion in the sterilization of catgut and the "dry heat" and "cumol methods" were the ones which he preferred.

DR. STONE stated that the ordinary catgut contains very little fat and he failed to see the necessity of extracting this substance by ether in its preparation. The catgut boiled in alcohol at the temperature of boiling water has given perfect results and is very strong.

DR. CARR stated that the iodine retained in the catgut would not be likely to cause poisoning. He thought it a very good idea to have some of the iodine retained in it. He did not believe in depending on heat entirely. Chemicals give good results. He suggested that alcoholic solution of iodine be used instead of the aqueous.

DR. WHITE in closing stated that the methods of catgut sterilization by cumol and alcohol were tedious and dangerous. Iodine was very soluble and volatile and the catgut could be readily freed from it. He thought the alcoholic solution might not penetrate the catgut.

Meeting of January 19, 1904.

DR. PRENTISS reported a

CASE OF AN UNKNOWN ABDOMINAL TUMOR HAVING THE CHARACTERISTICS OF A MOVABLE LIVER.

White, age 76, multipara, very much emaciated. Marked kyphosis due probably to old age. Abdominal wall so thin that the coils of small intestines could be seen in outline. A mass was present in right side resting in the hollow of the ilium. It was the size and shape of a liver, having a sharp anterior edge and a notch corresponding to the umbilical notch. Its upper surface was convex. There was tympany between the mass and the costal margin. Beneath the ribs in the lower liver region there was some dullness. A sharp edge could be felt in the epigastrium similar to the left lobe of the liver. If this mass was not the liver, what was it?

DR. BALLOCK wished to know why Dr. Prentiss thought it was not a liver.

DR. PRENTISS said the reason why there was doubt was because there was tympany between the mass and the costal margin. Dr. Wickham Legg has reported a similar case where the tumor proved to be an omental mass.

DR. PRENTISS read an essay on

FLOATING LIVER.¹

DR. LEWIS said that he had had no personal experience with cases of floating liver. He thought that Dr. Prentiss' classification might be changed. The classification he would make would be *congenital* and *acquired* (partial or complete). Congenital, due to congenitally weak ligaments. Acquired, due to a stretching or weakening of the ligaments at some period in life. Partial displacements are caused at times by gall-stones. Treves says few cases of movable liver should be operated upon. He (Dr. Lewis) agreed with Dr. Prentiss in that he did not believe in stitching the liver to the peritoneum as a remedy. He believes that removing a portion of the abdominal wall to increase the pressure on its organs and then operating on the liver would give better results.

DR. ZENKE had a case of floating liver at the German Hospital in Cincinnati last Spring in which he made a diagnosis of a large floating kidney. The patient was a woman, æt. 43, in good general health, who had borne one child. The supposed kidney was as large as two fists. Urine showed nothing abnormal. There was increasing pain in the tumor. He made a lumbar incision to suture the kidney in place, and came in contact with the kidney, as he thought. It appeared very dark, due, he thought, to congestion. He tried to push it in position and failing, examined it more closely and found it to be the liver. The liver was stitched to the wound, six or more sutures being used. The patient was relieved of her pain by the operation.

DR. STONE thought every one who looked often into the abdomen found many displaced livers, almost as many as displaced kidneys. The relative symptoms were much the same as those of floating kidney, the same as splanchnoptosis. The worst case of displaced liver he has ever seen was in a school girl, a patient of Dr. Ruffin. The edge of the liver was three inches below the ribs in most cases that he had seen, not being lower than two inches below the costal margin. When there was only a small amount of descent it was not proper to call it a floating liver. The patient had not laced too much. She had appendicitis and recovered after the operation. Some thought there was a relation between appendicitis and floating kidney, but he thought it doubtful.

DR. BALLOCK wished to mention a cause not given by the essayist, *i.e.*, retroperitoneal tumors. He saw a man with an enormous enlargement in the upper portion of the abdomen. There was cough, dyspnea, and thin fluid in the abdomen. He made an exploratory incision. The liver bulged into the wound, which had to be made ten inches long to get the hand beneath the organ. It seemed normal and there was nothing in the gall-bladder or bile ducts. A soft boggy mass behind the liver bled freely, but hemorrhage was finally checked. It was extremely difficult to close the abdominal incision on account of tension. The wound healed per

¹See original article, page 609.

primum but burst open on the fifteenth day after a fit of coughing. He tried to close the wound by means of adhesive straps, but failed and finally left it open with a piece of rubber tissue over it. The man walked around the ward in this condition. Peritoneal adhesions formed, and the patient was comfortable, so he left him alone. On his death, a week later, the wound was reopened and a $7\frac{1}{2}$ pound sarcoma enucleated.

DR. MILLER had seen a case where a misplaced liver with an elongated right lobe was mistaken for a floating kidney. Dr. H. A. Kelly, who operated, sutured the lobe of the liver to the abdominal parietes by sutures through the liver substance. Dr. Stone remarked that the colon tympany over the kidney helped in differentiating floating kidney from displacements of the liver.

DR. PRENTISS considered Dr. Lewis' classification good. The term floating liver should be applied to those cases where the liver is entirely free from the diaphragm. Dr. Zenke is not the only one who has mistaken a misplaced liver for a floating kidney. An English surgeon, in 1884, made a diagnosis of cystic kidney and introduced a trocar into the liver. The patient died twelve hours afterward. He considered floating liver a part of a splanchnoptosis. In nearly all cases operated upon the symptoms had been relieved. In his essay he purposely avoided misplacements due to tumors. Effusion above the diaphragm was a common cause of misplacement of the liver. Dr. Garnett's case was a man who, after lifting a heavy weight had a severe pain. The liver was three fingers beneath the margin of the ribs. He was confined to bed five days and was cured. Floating liver cannot usually be replaced.

TRANSACTIONS OF THE OBSTETRICAL SOCIETY OF LONDON.

Meeting of February 3, 1904.

The President, EDWARD MALINS, M.D., in the Chair.

MRS. SCHARLIEB showed a specimen of unruptured tubal gestation.

This was removed from a six-para, aged 30, who was quite well and regular up to July, 1903. At that time, during what appeared to be a normal period, she had an attack of severe pain, which lasted three or four hours. During the next three days the patient felt ill and vomited frequently. From July to October, there was constant, but not profuse hemorrhage, unaccompanied by pain.

On examination, a smooth, globular tumor, about the size of a billard ball, was found close to the uterus, but separate from it. Diagnosis lay between a tubal gestation and a small ovarian cyst.

The patient underwent operation on October 29, 1903. A spherical dilatation of the inner third of the right Fallopian tube was found. The bladder was adherent to its anterior surface, and

coils of intestine to the posterior. There was no paratubal hemorrhage.

The specimen consisted of the right Fallopian tube and ovary. The outer two thirds of the tube were normal with a patent ostium abdominale. A probe could be passed through it down the tube, but did not enter the swelling.

The globular portion consisted of the dilated tube, containing blood clot permeated by degenerate chorionic villi.

In the center was a smooth cavity lined by the amnion, and containing a perfect embryo of 24 to 28 days development. The umbilical vesicle was a prominent object.

It is probable that the hemorrhage occurred when the patient experienced the severe pain in July.

No decidua was expelled from the uterus before or after operation.

DR. CULLINGWORTH said that the number of cases of tubal gestation operated upon before rupture, though increasing, was still so small, that it was most desirable that every case should be placed on record. Mrs. Scharlieb's specimen was very beautifully preserved and mounted. Under any circumstances, the diagnosis of unruptured tubal pregnancy is attended with much difficulty, but the difficulty is much increased when, as in the present case, the gestation was too early for there to be a history of missed menstruation. Under such circumstances, a certain diagnosis must be almost impossible. He understood Mrs. Scharlieb to describe an outer peritoneal covering of the affected portion of the tube and, beneath that, the muscular layer of the tube wall, covering a quantity of blood clot, with which damaged chorionic villi were irregularly mixed up. He wished to ask Mrs. Scharlieb, whether there was any evidence of the chorionic villi having invaded the muscular coat, and also whether her examination of the specimen could throw any light upon the question as to whether the ovum in tubal gestation is or is not outside the lumen of the tube.

MR. ALBAN DORAN believed, that as a large number of tubal abortions were known to occur about the second month, it was highly probable that a still larger proportion of tubal pregnancies terminated even earlier and without symptoms. Perhaps, however, this was not the case, the tube being competent to bear an ovum until it attained a certain size. Much was known about the early stages of tubal gestation, but its clinical features required more study.

The discharge of dark blood known to older writers, but not accurately interpreted by them, had been correctly indicated as a cardinal symptom by Dr. Cullingworth.

Pain, associated with a pelvic swelling and disturbance of the catamenia, was sometimes absent, hemorrhages probably never.

The following list of officers and Council for the ensuing year was announced, and the proceedings closed with votes of thanks to the retiring Officers and Members of Council.

President, Edward Malins, M.D. Vice-presidents, A. H. Free-

land Barbour, M.D. (Edinburgh); Amand Routh, M.D., B.S.; William Japp Sinclair, M.D. (Manchester); Herbert R. Spencer, M.D. Treasurer, George Ernest Herman, M.D. Chairman of the Board for the Examination of Midwives, W. R. Dakin, M.D. Editor of the "Transactions," Herbert R. Spencer, M.D. Honorary Secretaries, Montagu Handfield-Jones, M.D., Robert Boxall, M.D. Honorary Librarian, Arthur H. N. Lewers, M.D. Other Members of Council: Sydney Beauchamp, M.B., B.C.; John M. Biggs; Albert Charles Butler-Smythe; Murdoch Cameron, M.D. (Glasgow); Charles James Cullingworth, M.D.; Ernest Rumley Dawson; John Henry Ewart (Eastbourne); John Shields Fairbairn, M.D., B.Ch.; Charles Arthur Goulet; David Berry Hart, M.D. (Edinburgh); Arthur Corrie Keep, M.D., C.M. (Edinburgh); Arnold W. W. Lea, M.D. (Manchester); Cuthbert Lockyer, M.D., B.S.; William Rivers Pollock, M.B., B.C.; Harry Campbell Pope, M.D.; Edward Reynolds Ray; Walter C. Swayne, M.D. (Bristol); Charles J. Wright (Leeds).

Meeting of March 2, 1904.

The President in the Chair.

DR. HANDFIELD-JONES showed two specimens of

UNRUPTURED TUBAL GESTATION,

both at about the seventh week. In one case, death had occurred owing to severe hemorrhage, which had poured out from the open end of the tube. In the other case, only a couple of drachms of blood had escaped into the peritoneal cavity. In both cases, much blood-clot was found in the distended tube surrounding the ovum. The desirability of early operation in these cases was advocated.

DR. CULLINGWORTH asked whether an examination under an anesthetic had been undertaken in the case that died, and remarked on the injury likely to be caused during manipulation.

DR. HARRISON CRIPPS and DR. HERBERT WILLIAMSON presented the records of two cases involving the question of the site of impregnation.

CASE I. TUBAL GESTATION AFTER COMPLETE REMOVAL OF THE OVARY ON THE SAME SIDE.

There are two possible explanations of this phenomenon:

- (1) The presence of an accessory ovary on the right side.
- (2) External migration of the ovum.

These two possibilities are discussed in some detail, and the conclusion arrived at is, external migration of the ovum is the more probable.

Two similar cases recorded in the literature are quoted.

CASE II. PREGNANCY AFTER REMOVAL OF A PORTION OF BOTH TUBES.

A case is reported in which a patient became pregnant after both Fallopian tubes had been ligatured; to prevent subsequent

conception the abdomen was reopened and a portion of each tube excised. In spite of this the patient again became pregnant.

Similar cases from the literature are quoted, and the manner in which the ovum traversed the distended tube is discussed.

The bearing of these two cases upon the etiology of tubal gestation is briefly indicated.

MR. ALBAN DORAN observed that in respect to Case I, he considered that the existence of ovarian tissue on the same side as the Fallopian tube fully explained the subsequent pregnancy. External migration seemed to him less probable. In regard to Case II, it was not necessary to assume that the continuity of the entire canal of the partially excised tube must be restored before the tube could resume its functions. These two opinions were supported by the published reports of authentic cases of pregnancy after double ovariectomy. Mr. Doran removed a cyst of the right ovary fourteen years after the left had been amputated for cystic disease by Dr. Robert Barnes and noted complete atrophy of the pedicle on the left side. Yet the patient bore a child to term two years later. The remains of the right tube and a trace of ovarian tissue on the right side proved sufficient to allow of impregnation; external migration was not possible. Stansbury-Sutton, Baldwin, S. C. Gordon, M. M. Morris and Anderson Robertson reported cases where both ovaries and tubes were amputated for cystic or inflammatory disease, yet the patients bore children afterwards. The stump of one tube had become patent (ligatures seldom close mucous canals securely) and thus an ovum was conveyed from ovarian tissue to the uterine cavity. It followed that in partial excision of the tube for the induction of sterility, restored potency of the uterine portion was sufficient to defeat the operator's aims.

DR. WILLIAMSON said that, though he appreciated the justice of Mr. Doran's criticism, in this particular case he was still in favor of external migration of the ovum. Here we are not dealing with an ovarian cystoma nor with inflamed appendages. A smooth, rounded, pedunculated dermoid tumor was discovered at the first operation; there was no difficulty in removing it and it was improbable, on the face of it, that the removal was incomplete. Moreover, the possibility of such a condition was discussed at the second operation, and a careful search failed to reveal anything like the remains of an ovary. Further, a very thorough examination was made of the specimen after removal, again with a negative result. Mr. Doran very rightly distinguished between ovary and ovarian tissue, but, in this case, neither ovary nor ovarian tissue could be found. Migration of the ovum must be regarded as an established fact. That being so, it is reasonable to believe that such is the explanation of the pregnancy in this case.

DR. HERMAN thought there was abundant evidence that the ovum might traverse the peritoneum from one ovary to the opposite tube. There was also some evidence that an ovum might trav-

erse the uterus, and get from one tube into the other. ¹Knowing that ligature of the tube did not ensure sterility, he had endeavored to sterilize patients after Cesarean section by removing the tubes altogether, tying the stumps close to the uterine cornu, and, so far, he had not heard of any patient so treated becoming pregnant.

THE PRESIDENT said that his experience in some cases of Cesarean section and myomata had shown the difficulty of efficient sterilization by ligaturing the Fallopian tubes. Simple ligation, and even cutting out a piece of the tube, had been proved to have failed in the object sought. It had been shown that the best method is to excise a wedge-shaped piece of the broad ligament, including the tube, near to the cornu of the uterus. In case of Cesarean section this plan can be more readily carried out when the incision in the fundus has been made transversely instead of the usual longitudinal one.

DR. GALABIN said that he was interested in the demonstration given in the paper that the method of excising a portion of each tube was not an absolutely certain one of preventing future pregnancy. In future he should add to his plan of excising in conical shape the mucous membrane of the end of the tube left attached to the uterus, the application of a stitch to close the opening. But he had not yet met with any case of pregnancy in patients whom he had treated in this way. He thought with the authors of the paper that external migration of the ovum was much the more probable explanation of their first case. He thought that this view was really supported by the cases quoted by Mr. Doran, in which pregnancy had recurred after removal of all the tubes except the small stump left attached to the uterus. If such a stump without any fimbriated extremity could procure enough ciliary current in its neighborhood to pick up the ovum, it seemed still more likely that when the fimbriated extremity was intact, it might readily attract an ovum of the opposite side, which had escaped just beyond the range of the ciliary current of the tube of its own side. Such an occurrence was probably not uncommon.

DR. BOXALL said that, even in healthy conditions of the pelvic organs, he found no difficulty in accepting the possibility of transmigration of the ovum in the abdominal cavity from the ovary on one side to the tube on the other. The relation of the parts in situ, with the abdomen unopened, is very different to what is observed either on the post-mortem table or at an operation. With the pelvic organs and intestines closely applied in what is under ordinary circumstances during life, a potential cavity only, it is quite easy to imagine how the ovum, floating about like a drop of oil, might readily find its way from one ovary to the abdominal ostium of the Fallopian tube of the opposite side, and so be swallowed; or, for the matter of that, find its way into an opening in the tube which has resulted from its severance.

¹See Hassfurth, quoted by Leopold, *Archiv für Gynecol.*, Band XVI. S. 27; and Schaeffer, *Zeitsch. für Geb.*, Band XVII, S. 13.

DR. CULLINGWORTH said that he was about to make a very similar remark to that made by Dr. Boxall as to there being no great difficulty in accepting the theory of external migration of the ovum. In view of the numerous cases in which, when operating for inflammatory disease of the uterine appendages, the appendages of the two sides are found united to each other behind the uterus, he would go even further than Dr. Boxall, and say that the ovaries and abdominal ostia of the Fallopian tubes not only lie within a much more contracted area than appears to be generally supposed, but are not infrequently in actual contact. If it be said that, in the operation cases alluded to, the conditions are those of disease, he would reply that the position of the parts was not likely to have been altered by the disease and that there had probably already been contact where there was now actual adhesion. Writers spoke of the ovum travelling across the peritoneal cavity and conveyed the impression of a long and almost inconceivable journey, whereas the ovum might merely have to step in next door.

TWO CASES OF ABDOMINAL HYSTERECTOMY FOR FIBROIDS, COMPLICATED BY PREGNANCY; WITH SPECIMENS.

Case I.—A woman of forty-two was first seen by the writer when two and a half months pregnant. There was a mass in the abdomen reaching up to the umbilicus on the left (pregnant fundus), and out to the iliac fossa on the right (hard fibroids); the cervix was thrust to the front by a hard fibroid in Douglas' pouch, almost filling the pelvis. This pelvic fibroid was pushed up, and a ring inserted. The tumor tended to fall back, and at the end of pregnancy was found to be no longer replaceable and very tender, and to obstruct the entry of the presenting vertex into the brim. After consultation, a Porro-Cæsarean section was decided on, and presented no difficulty. After delivery of a living child the pelvic fibroid was found to be pedunculated and fixed by adhesions, which were separated, and the uterus and fibroids removed by supra-vaginal amputation; the stump was treated retroperitoneally by suture. The patient, who did well for two days, died on the third day, with great acceleration of pulse and marked distension of the abdomen.

The post-mortem showed local peritonitis at the side of adhesion, to which a coil of bowel was attached; cultures from the blood and peritoneal fluid proved sterile. It is suggested that death was due to hampering of a weakened heart by over-distension of intestine above the adherent coil, and that consequently an earlier myomectomy before the tumor became adherent might have given a better result.

Case II.—A Igravida of forty-one, with multiple fibroids before marriage, came again under care when three months pregnant. The uterus, beset with fibroids, reached above the umbilicus, and from the pelvis a right-sided intra-ligamentous fibroid could be felt displacing the cervix. Five weeks later development was

noted to be proceeding towards the posterior wall. Owing to the obstruction of the intra-ligamentous fibroid, and the doubtful possibility of development of a living and undeformed child, the question of operation at this stage or at term was discussed, and decided in favor of the former as involving less risk for the mother. The uterus was removed entire by supra-vaginal amputation, and the patient recovered well.

The specimen shows thinning of the posterior uterine wall, suggesting the possibility of rupture had development proceeded, and a low implantation of the placenta on an intra-mural fibroid, which must have led to hemorrhage in the course of spontaneous labor.

MR. ALBAN DORAN believed that hysterectomy early in pregnancy was the safest cure when the fibroid sprang from the posterior part of the inferior uterine segment. He alluded to a specimen illustrating this condition which he had exhibited a few years ago before the Society. The uterine cavity lay between two fibroids. Had the lower been pushed out of the pelvic cavity the uterus might have been burst, like a soft fruit pressed between two stones. He exhibited three similar specimens also from his own operative practice. In two the cervix was involved, and in the third the tumor had opened up the broad ligament. The danger of attempting to push up an encapsuled tumor was obvious. All four patients had recovered and were freed of an organ which had functioned badly and had been a source of danger. He had removed the ovaries in three of these cases (ages 40, 39, 30) and the menopause had immediately followed without disagreeable symptoms. In the fourth (age 30), he saved those organs; periodical hemorrhages from the cervix followed and ceased abruptly at the end of a year; then the patient suffered for a few months from flushings.

DR. HERBERT SPENCER showed a specimen of degenerated fibromyoma weighing over seventeen pounds, enucleated from the broad ligaments nine hours before delivery at term. The child was born dead, but seemed quite fresh. It was 21 inches long and weighed 6 lbs. 2 ozs. The mother, who was forty-one years of age and had had four children previously, made good recovery. Dr. Spencer remarked that, although he had seen a considerable number of pregnancies complicating uterine fibroids, this was the only case but one in which he had found it necessary to operate during pregnancy. Tumors which encroached on the pelvis in the early months were often drawn up at the end of pregnancy or in labor. He was of opinion that operations in the early months and mutilating operations were by far too frequently performed in cases of fibroids complicating pregnancy. The specimen showed that even at full time a very large tumor might be successfully removed by the operation of myomectomy. He had no doubt that both the cases shown by Mrs. Boyd required operation, but thought that in the second case it would have been better to wait and see whether the pregnancy could not be al-

lowed to continue until the child was viable or even developed to term. Whether the uterus should have been removed in that case was perhaps doubtful; but in the case of a pedunculated tumor, such as in one of Mr. Doran's cases, he thought the conservative operation of myomectomy was preferable.

DR. AMAND ROUTH spoke strongly against operative interference in the early months of pregnancy unless very urgent symptoms were present, especially as two lives were involved and all interference must be surgical, myomectomy or hysterectomy, the induction of abortion being unjustifiable for obstructing fibroids. It was impossible to be sure fibroids would cause obstruction at full time, and even if they did so, operation then was just as easy and quite as safe, and a living child was secured. Pressure symptoms were often capable of relief, and were often temporary, and no operation in the early months should be done without a fair trial of suitable treatment. Spontaneous rupture of the uterus was very rare, if not unknown, and Dr. Hogan's case, alluded to by the author, was open to grave doubt. The danger of hemorrhage, which was mainly post-partum, need not be considered in this connection and he had never heard of an instance of fetal deformity in these pregnancies. On the whole, therefore, he strongly urged palliative treatment till near full term wherever possible.

DR. CULLINGWORTH said the decision in the second of Mrs. Boyd's cases had been arrived at only after the most careful consideration. There was room, of course, in such a case for difference of opinion, but he could not help thinking that objectors to the course adopted might have taken a different view had they had the opportunity of seeing and examining the patient. As his paper on the subject showed, he was strongly of opinion that interference with the course of pregnancy in these cases was seldom justifiable and it was therefore with reluctance that he came to the conclusion that he did. He did not think, in spite of the statistics quoted by Dr. Amand Routh, that it could reasonably be maintained that operation at term was safer than an earlier operation.

DR. LEWERS said that as regards the two cases of Cæsarean section he had performed for obstruction due to pelvic fibroids, he had seen both cases comparatively early in the pregnancy. Both cases had rather severe pain at that period, but it gradually passed off, and during the latter half of pregnancy the patients were very fairly comfortable. He thought it only rarely justifiable in such cases to perform abdominal hysterectomy in the earlier months of the pregnancy. By that treatment the child was, of course, lost, and the patient had to undergo a severe operation. He thought it much better when at all possible to let the patient go to full term, then perform Cæsarean section. In that way the child was almost certainly saved, and the mother underwent no greater risk than if hysterectomy had been performed during the earlier

months. He would go further and say that, when the fibroids were wholly or chiefly pelvic, and there was an otherwise fairly normal uterus, the operator should be content with performing a conservative Cæsarean section leaving the pelvic fibroid, or fibroids, untouched. In his two cases the fibroids had given rise to no symptoms prior to the pregnancy, and he thought, therefore, that there was a very fair probability that afterwards they would cause no symptoms. He had, therefore, performed a conservative Cæsarean section in both cases, and left the fibroids alone. So far in those two cases, a year and a half, and sixteen months, respectively, had elapsed since the operation, and he had not heard of the fibroids causing any trouble. In both his cases the children were well-developed and perfectly normal, and had thriven well up to the present.

REVIEWS.

DISEASES OF THE GALL-BLADDER AND BILE-DUCTS. By A. W. MAYO-ROBSON, F.R.C.S. Hunterian Professor of Surgery and Pathology, 1897, 1899 and 1903, etc. Assisted by J. F. DOBSON, M.S. Lond., F.R.C.S., late Resident Surgeon to the General Infirmary at Leeds. Third edition, pp. 485. New York: William Wood and Company, 1904.

This edition of Dr. Robson's well-known book has been entirely recast and is practically a new work. It bears the impress of a ripe experience and is authoritative, clear and practical. It includes chapters on certain important anatomical and physiological considerations, injuries of the bile-passages, inflammatory affections, intestinal obstruction, tumors of the gall-bladder and bile-ducts, gall-stones, the various operations on the bile-passages, and a list of cases.

Some of the noteworthy features of the work are the conclusions that the bile is chiefly excrementitious and like the urine is constantly being formed and cast out. The bile probably assists in the absorption of fats but its presence in the intestines is not necessary for the digestion of an amount of fat capable of maintaining nutrition. Its antiseptic properties are unimportant.

The author's recent operative work has given the remarkable mortality of only 2.7 per cent. in all cases, 1.06 per cent. in simple cases of cholecystotomy, 6.2 per cent. for cholecystectomy in non-malignant cases, 1.9 per cent. for choledochotomy with a second conservative series of over 50 cases of choledochotomy and duodeno-choledochotomy without a death. He employs the incision through the right rectus with extension upward to the ensiform when necessary. His technique is well described and the operative indications closely indicated.

A TEXT-BOOK OF THE DISEASES OF WOMEN. By THOMAS A. ASHBY, M.D. 223 illustrations, 661 pages. Williams and Wilkins Company, Baltimore, 1904.

Both paper and print are of good quality. Most of the illustrations are schematic and copies. In chapter 5 we commend the sentence "The indications for surgical work should be very pronounced in every case before the hygienic and medical treatment of the case should be abandoned." This chapter is valuable and could be read with profit by those who only see the surgical side of gynecology, though perhaps exception should be made to the advice to use the curette to remove the *débris* left after an abortion or labor at full term. In injuries of the perineum the Emmet operation is given the preference. The catheter is used in perineal operations until union is complete. In cases of extreme cystocele with complete prolapse of the uterus, when the patient has passed the child-bearing period, vaginal hysterectomy is advocated. Silver wire is given preference over other suture material in the closure of fistulæ. Anteversion is given as the normal position of the uterus (instead of anteversio-flexio). In performing the operation of ventral fixation, the author passes one or two sutures through the posterior wall and fundus of the uterus to attach it to the parietal peritoneum. In considering vaginal operations for the cure of retro-displacements, he considers the original Schueckling operation the only one worthy of notice. In the treatment of acute puerperal septic endometritis curetting is strongly advocated. In acute metritis antipyretics are advised to lower the temperature, to sustain the action of the heart, and to keep up the nourishment of the patient. In instances of laceration of the cervix, unless the patient can be kept under close observation, trachelorrhaphy is advised as a prophylactic measure. In the technic of abdominal hysterectomy the employment of a constricting ligature or a wire clamp on the cervix, after the broad ligaments have been ligated is taught. After the amputation above the ligature or clamp, the constriction is loosened and the bleeding vessels ligated. In supravaginal hysterectomy the author dilates the cervical canal and applies pure carbolic acid to it and then closes the stump. Only 10 per cent. of the patients coming under his observation with cancer of the uterus were still in condition for operations; these, however, had been treated by high amputation or hysterectomy with but one death and no recurrence, so far as he knows.

He considers laceration of the cervix the principal cause of epithelioma. In the chapter on ectopic gestation Fig. 195 is depicted as a tubal pregnancy which in natural size has the following dimensions. Head 5 inches, at its widest part $12\frac{3}{4}$ inches. The largest diameter 14 inches, from base to apex. Otherwise the chapter is clear and well written. Torsion of the pedicle is said to occur in about 10 per cent. of the cases of ovarian tumor. On page 635 under injuries of the ureter, one of the given methods which must be employed is to direct the ureter into the intestine. While

the work may be called a fair text-book, we do not consider it to fill a "long-felt want." Not one really new point is contained in the book. B.

GRUNDRISS ZUM STUDIUM DER GEBURTSHUELFE IN 28 VORLESUNGEN UND 578 BILDLICHEN DARSTELLUNGEN VON DR. ERNST BUMM ORD. PROFESSOR UND DIREKTOR DER UNIVERSITAETS-FRAUENKLINIK IN HALLE A. S. Second edition. J. F. Bergmann, Wiesbaden, publisher, 1903.

The book is highly recommended to all interested in obstetrics and familiar with the German language. The author takes his students through the entire obstetric art, leaving out nothing of importance and avoiding irrelative phraseology. We call particular attention to the excellent illustrations with which the book abounds. These themselves teach much and make the lectures particularly clear. The first lecture takes the student through the historical part, from which we mention only Hippokrates' view that the child leaves the womb because of hunger, and can do this only when the head presents downwards, so that it can brace its feet against the uterine fundus. The time required for the passage of the human ovum through the Fallopian tube is uncertain. Its motility is slower than that of the spermatozoa. It probably requires from 8-12 days. The meeting place of the ovum and spermatozoa is also uncertain in the human subject. Judging from analogy with the mammalia, however, it is usually in the tube. In the formation of the liquor amnii probably both the mother and the fetus take part. Whereas up to $4\frac{1}{2}$ months the breech presents in 38 per cent. of cases, towards the termination of pregnancy the head presents in 97 per cent.; this, according to the theory of gravity, is caused by the greater weight of the head. The weight of the uterus towards the termination of pregnancy is increased to about 1,000 gm. The obliteration of the cervix is brought about by the pressure of the head; from the seventh month the descending head presses closer on the lower uterine segment, pressing it and the anterior vaginal vault downwards. Pregnancy may be looked upon as a test of the strength and healthy condition of the other organs of the body. The physiologic strain placed upon the human organism is likely to produce a deleterious influence on organs deviating from the standard of health. The fetal heart sound was discovered by the surgeon M. Mayor, of Geneva, in 1818. The site of its greatest intensity, according to the position of the fetus is accurately illustrated in the diagrams of the text. Likewise the usual height of the fundus uteri from the fourth month of gestation. During the last weeks of gestation daily warm baths and washing with soap are advised. Sensitive nipples should be frequently washed with whiskey. Physicians and midwives should accustom themselves to look upon the introduction of the finger into the genitalia of a woman in labor as a serious matter. In the majority of instances two internal examinations suffice, one before the rupture

of the membranes, to get an idea as to the degree of dilatation, and the other after the rupture of the membranes, to ascertain the presenting part. As a matter of fact, there is up to the present day no agent which will produce absolute sterility of the skin. The disinfection of the hands, according to Fuerbringer's method, is considered as the best. After proper preparation of the fingernails, scrubbing the hands and arms in hot water with soap and a brush. After drying them with a coarse towel, five minutes' scrubbing with 70 to 80 per cent alcohol, and then immediately soaking them in a 1/1000 sublimate solution. Instead of sublimate, Sublamine, or a 2 per cent Lysol solution may be used. The use of rubber gloves is considered the safest means to prevent infection from the examining hand. The external genitals should also be properly cleaned. Before introducing the finger the labia should be separated with the free hand to avoid the possible introduction of germs from the external parts. The best support may be given to the perineum when the woman is in the dorsal position. Support of the perineum does not become necessary until a part of the head remains visible during the intervals of labor pains. If it is obvious that a perineal laceration is unavoidable, it is preferable to make a lateral incision, rather than to have a spontaneous laceration take place. The cord should not be tied and cut immediately after birth, but one should wait until the blood of the umbilical vein has emptied itself, which usually requires about five minutes. In cases of normal labor the waiting method should be pursued during the third stage of labor. A careful inspection of the placenta after its expulsion should be made, to see that it is intact; less anxiety need be had with regard to the membranes; if any part is left, it is usually expelled spontaneously during the first days after accouchement, without having caused any serious symptoms. Even after a normal confinement the uterus should be controlled at least two hours. If then the organ is well contracted, hemorrhage from atony need not be apprehended. A chill of from five to ten minutes' duration follows in about one-third of all confinements; it need not be looked upon as a serious matter. Little is known as to the cause of this chill. The indulgence of beer for at least two weeks after confinement is warned against, because it has a tendency to cause bleeding. The regular evacuation of the bladder and rectum is insisted upon. Also much stress is put upon the proper application of an abdominal binder for a period of four weeks post partum. The icterus neonatorum, which is present in about two-thirds of the children, is of a hepatogenous, not of hematoogenous nature. Women with chronic diseases, like epilepsy, phthisis, etc., should not nurse their children. The weighing of the infant at regular intervals is important to determine the value of the nutriment. The ability to conceive with more than one child is hereditary in many families. The largest number so far observed has been six. This was observed by Vassalli in 1888, in Castagnola. These conception products, four male and two fe-

male, were aborted in the fourth month of gestation, and had a total weight of 1,730 gm. Another unusual case is that of eleven confinements with thirty-two children. Three times twins, six times triplets and two times quadruplets; the father was a twin child, and the mother a quadruplet child. Superfetation is doubtful. About one-fourth of the twin pregnancies are prematurely interrupted. More care must be taken in the observation of the contractility of the uterus in multiple conception pregnancies. About 1 per cent. of all pregnant women have pronounced albuminuria. Hyperemesis is looked upon as a hysterical neurosis. All therapeutic measures, if they benefit, are thought to do so by suggestion. Therefore one who understands hypnosis is likely to get better results. Syphilitic men should not marry until four to five years have passed after the disease, appropriate treatment having been used. Pregnancy and parturition with valvular disease, is influenced more by the condition of the heart muscle than the valvular lesion. If it is impossible to replace a retroverted gravid uterus the organ should be reduced in size by puncturing it per vaginam with an aspirating needle of medium thickness and thus emptying the liquor amnii. The replacement can then be readily accomplished. In one instance the author succeeded without even causing an abortion.

Fibromyomata are only likely to cause obstacles to delivery when they are situated in the cervix, the cellular tissue, or fixed by adhesions in the cul de sac of Douglas. An excellent illustration of an accurately observed instance is given, which shows the changes which a myomatous uterus undergoes during the progress of pregnancy. At the third month one would have been likely to give an unfavorable prognosis as to the probability of spontaneous delivery at term, judging from the illustration. The dangers of producing abortion in such cases is dwelt upon. In instances where well-founded doubt exists to accomplish delivery per vias naturales without causing much damage to the soft parts, Cæsarean section should be preferred to a forcible delivery.

An impregnated carcinomatous uterus should always be extirpated if the disease has not advanced beyond the limits of a possible curative stage. Ovariectomy, in instances of small tumors is advised against until after delivery. If an ovarian tumor is found incarcerated in the pelvis at the time of labor, and if it cannot be dislodged, vaginal section should be done and the tumor removed. The danger of an acute exacerbation of latent gonorrhea during the puerperium is prominently brought out. In cases of gonorrheal infection, irrigations with $\frac{1}{2}$ to 1 per cent. ichthyol solution are praised. (We have found local applications with a 25 to 50 per cent. watery solution of ichthvol excellent.) Tubal abortion is the most frequent termination of ectopic pregnancy. The diagnosis of an uninterrupted tubal pregnancy in its early stages is very rarely made. It may be more readily made when there are recurrent tubal labor pains. In malignant chorion epithelioma we have the interesting fact, that the origin of the

pathological cell proliferation, the infection of the maternal organism with malignant degenerated cells of fetal origin, has been positively demonstrated. The expulsion of a molar pregnancy should be left to nature unless there is present profuse bleeding, in that case the uterus should be emptied manually. Instruments should be avoided. If the hemorrhage does not cease after the evacuation of the mole, the uterine cavity should be tightly tamponed with sterile gauze. A transverse presentation, if discovered before rupture of the membranes, can usually be corrected by means of external version. This measure is generally useless after rupture of the membranes, then podalic version should be resorted to. If an arm is extruded, the shoulder tightly impacted, the cervix fully dilated, and the uterus intimately applied to the child even in deep chloroform narcosis, no attempts at version should be made, but delivery should be accomplished by embryotomy. If prolapsus of the cord is diagnosed before rupture of the membranes, everything possible must be done to avoid such rupture until the cervix is *fully dilated*. If this can be accomplished the preferable method of dealing with the cord is, as soon as the membranes have ruptured to have the woman assume the knee chest position and introduce the entire hand into the vagina and manually replace the cord as high as possible above the head. After the replacement wait for a few pains before the patient resumes the customary position. Should the cord prolapse again after it has been replaced by the mentioned technic, no time should be lost in doing a podalic version. From the standpoint of obstetrics, every pelvis must be considered as contracted if it is lessened from $1\frac{1}{2}$ to 2 cmrs. in one of its principal diameters. In contracted pelvis, in which the degree of contraction is such as to give a relative indication for Cæsarean section, this should be given preference if the general circumstances warrant a favorable prognosis. If, however, the membranes have been ruptured a long time, and many internal examinations have been made, as well as attempts at delivery, if fever is present, and indications that the patient has already been infected, then craniotomy is the preferable procedure to effect delivery. The causes of placenta previa are uncertain; one may look upon pathological changes in the endometrium as a probable etiological factor, likewise a thick coating of the endometrium with mucus; these conditions may prevent insertion at the normal site. In instances of retained placenta manual extraction should never be undertaken in the absence of serious symptoms. An improper kneading, rubbing, and pressing on the uterus, may be a cause of retention of the placenta by interrupting the normal mechanism of separation. The most usual form of late puerperal bleeding is that the lochia remain tinged with blood for three or four weeks, and on every physical exertion a more severe bleeding takes place. Usually at the site of the placental insertion, thickened decidua particles are present. They should be removed with the finger. A curette should not be used until the fifth or sixth week.

In cases of eclampsia the kidneys and liver are in a diseased pathological condition; in both organs they are not inflammatory, but degenerative processes—cloudy swelling, fatty degeneration and necrosis—of the secreting gland epithelia. In the absence of having thus far failed to experimentally establish the cause of eclampsia, we assume that it is caused by poisoning with substances which are formed in the body and which should be eliminated with the urine. They are retained because the kidneys do not functionate. As to the nature of these substances nothing is known. The best remedy to stop the eclamptic seizures is morphine in large doses and the emptying of the uterus as soon as possible. The bacterium coli is most frequently found on the infected perineal tears. The streptococci found in septic wound infections are best named under the general term of "*Streptococcus septicus*." The variance in the virulence of the streptococci is the principal cause for the variable termination of septic infections. Next the site where the infection takes place; and then the time when the infection occurs. Infection at the site of the placental insertion is most dangerous. Atonic or aseptic thrombosis of a puerperal patient need not necessarily give rise to prominent symptoms. A gradual acceleration of the pulse rate with a perfectly normal temperature, may be the only symptom pointing towards a thrombosis. The dangers of an aseptic thrombosis consist in embolism of the pulmonary artery. Among the bacilli forms causing infection, that called by Pasteur "*Vibrio septique*" is important. A beginning of the ailment during the first days of the puerperium, shows an infection with highly virulent germs. Antistreptococci serum is sometimes employed with decided benefit in intense streptococcic endometritis, phlegmasia alba and pure septicemia without localization. Early intervention in cases of septic tumors of the adnexæ is warned against.

In contracted pelvis, Walcher's position is indicated at the time when the head should pass the contracted inlet. In using forceps it must be ascertained that they can be used without danger. The cervix must be fully dilated, the membranes ruptured and retracted over the head, and the head must be firm in the pelvis and be of proportionate size. Only dangerous symptoms on part of the mother should induce one to set aside these requisites. There is no excuse for attempts at extraction lasting half an hour. **BOLDT.**

THE LYMPHATICS. General anatomy of the Lymphatics. By G. DELAMERE. Special Study of the Lymphatics in Different Parts of the Body. By P. POIRIER, Professor d'Anatomie à la Faculté de Médecine à Paris, Chirurgien des Hôpitaux, and B. CUNÉO, Professeur agrégé à la Faculté de Médecine de Paris. Authorized English edition translated and edited by CECIL H. LEAF, M.A., M.B. (Cantab.), F.R.C.S. (Eng.), Assistant Surgeon to the Cancer Hospital, and to the Gordon Hospital for Rectal Diseases, late Demonstrator of Anatomy, London Hos-

pital. Pp. 301; with 117 illustrations and diagrams. Chicago: W. F. Keener and Company, 1904.

This work forms one section of *A Treatise of Human Anatomy*, edited by P. Poirier and A. Charpy. It opens with a chapter by Delamere in which is considered the general structure, macroscopic, microscopic, and chemical, of the lymphatic system, including the white cell. The second section is devoted to a special study of the lymphatics of different regions. In this study Gerota's method of injection with Prussian blue has been extensively employed by the authors, who claim to have personally studied the lymphatics of the entire body. A large number of the cuts are taken from Sappey. If accurate, the cuts and descriptions are certainly of value. A just criticism of the work, however, would necessitate repetition of the many injections in order to confirm the observations of the writers.

PROGRESSIVE MEDICINE. *A Quarterly Digest of Advances, Discoveries, and Improvements in the Medical and Surgical Sciences.* Edited by HOBART AMORY HARE, M.D., assisted by H. R. M. LANDIS, M.D. March 1, 1904. Surgery of the Head, Neck and Thorax; Infectious Diseases, Including Acute Rheumatism, Croupous Pneumonia, and Influenza; the Diseases of Children; Laryngology and Rhinology; Otology. Pp. 337. Lea Brothers and Company, Philadelphia and New York, 1904.

Progressive Medicine now appears for the first time in its new attire. It is probable that in its simple paper cover it will be sooner discarded than its cloth-covered predecessor, but its value is transitory; and the diminished cost amply compensates. The section of especial interest to readers of this Journal is that on Diseases of Children, by Floyd M. Crandall. It is unusually brief and consists chiefly of articles upon the mortality of early life, septic infections, and infant feeding.

BRIEF OF CURRENT LITERATURE.

On Wet Nursing and the Selection of a Wet Nurse.—W. Butler Walsh (deceased) B.A., M.D. Univ. Dub., F.R.C.S. (*Inter. Med. Jour.*, Dec. 20, 1903). When, for any reason, a child cannot be nursed by its mother the choice must be made between wet nursing and artificial feeding. The chief real objection to a wet nurse is that the child may contract some disease from her. There is, per contra, the danger of the nurse contracting syphilis from the child. The nurse may be intemperate or vicious or irresponsible. She may, by her temper or habits, cause the child to have colic or diarrhea. A wet nurse should be healthy and strong, but not too fat; age twenty to thirty years. She should have good teeth, a clean, healthy skin and pharynx. It is of utmost importance that her child be healthy and free from any trace of syphilis. The evidence of the person present at the confinement should be had as to the healthiness of the placenta and child at birth. The nurse's breasts should be full and conical in shape, not too fat; they should contain plenty of milk and become distinctly smaller when empty. The specific gravity should be 1.025 to 1.035, with fats three to four per cent. The age of the nurse's milk should be approximately that of the foster-child, better older than younger than the child. The real disadvantages of wet nursing must be minimized by scrupulous and conscious care in the selection of the nurse; the sentimental ones put up with for the sake of the child.

Taenia Cucumerina S. Elliptica in a Child Six Months Old.—Gustav Sonnenschien (*Muenchener Medizinische Wochenschrift*, Dec. 29, 1903). The child was a boy in good health. The parents noticed something in the stools and took a dejection to the doctor. He discovered young and old segments of tapeworm. The old ones strongly resembled cucumber seeds. The child was put on reduced feedings and given pomegranate by tube. This dose was about half vomited, and a dose of Merks Ext. Filic. Maris was given to make up. A few hours later four taenia, with heads, were expelled. One chain of segments measured 30 cm., which is longer than the whole is usually supposed to grow. A dog was found to have been a constant companion of the boy, and almost surely the source of his infection. These worms are common in dogs and cats; the cysticercus develops in the lice of these animals, full development being reached in the intestines of these hosts or in man.

Remote Sequelæ of Adenoids.—C. D. Conkey (*Wisconsin Med. Jour.*, November, 1903) recapitulates as follows: (1) Nature often fails to bring relief to the organs unduly influenced by the presence of adenoids, by the shrinking process which takes place about the age of puberty. (2) The facial bones are arrested

in their development, giving a characteristic appearance to the facial expression which is very far from the beautiful. (3) The nasal cavities are narrowed by long years of non-use and are frequently distorted by the development of a high palatal arch encroaching upon their calibre. (4) The habit of mouth breathing is acquired especially at night, which acts deleteriously upon the ears and upon the respiratory organs. (5) Chronic post-nasal catarrh is a frequent accompaniment of adenoids and persists after their disappearance.

An Easy Method of Percentage Infant Feeding.—C. W. M. Brown, M.D., of Elmira, N. Y. (*Pediatrics*, November, 1903). The secret of successful feeding is to give a food which a child can digest. Age and weight are in many cases a poor guide. The secret of success lies in putting the strength of the mixture down to so weak a point that a child can digest it, and then work it up. This method has been the corner-stone of many enviable reputations. Great dilution is the secret of the digestion of condensed milk, a 1 to 12 dilution giving one-eighth of the amount of fat and one-third of the amount of proteid found in normal breast milk. When difficulty exists in the digestion of milk it is usually with one, or chiefly with one of its constituents, and this one is the one to be most changed. Dr. C. W. Townsend and others found that the upper fourth of average cow's milk contained approximately 10 per cent. fat, 4 per cent. proteids, and 4 per cent. sugar, a fat, proteid ratio the same as in breast milk, i.e., two and a half times as much fat as proteids. This can be obtained by siphoning off the lower three-quarters or by simply pouring off the upper quarter. With a 10-per-cent. cream it is evident that one ounce of cream in a 20-ounce mixture would give a percentage of one-twentieth of 10 per cent., or one-half of one per cent. of fat. In the same way the percentage of albuminoids would be one-twentieth of four per cent., or one-fifth of one per cent.; for the same reason the percentage of sugar would also be one-fifth of one per cent. An even tablespoonful of milk sugar added to a 20-ounce mixture raises the percentage of sugar two per cent.; the same amount of cane sugar raises it three per cent. The rule is that: each ounce of 10 per cent. cream in a 20-ounce mixture represents .5 per cent. of fat, .2 per cent. of albuminoids and .2 per cent. of sugar, and each ounce of milk sugar represents two per cent., or of cane sugar three per cent. If we wish to increase the albumin without an increase of fat it is necessary to add milk from which the cream has been removed, or whole milk, or top milk containing less than 10 per cent. of fat. By applying this principle to upper quarter, as above, to whole milk, or to upper half (7 to 8 per cent. fat), we can obtain almost any proportions.

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ORIGINAL COMMUNICATIONS.

PERITONEAL DRAINAGE.

BY

HOWARD CANNING TAYLOR, M.D.,
Junior Gynecologist to Roosevelt Hospital, New York, N. Y.

THERE are few questions of more interest to the abdominal surgeon than the one of peritoneal drainage. My first practical experience in surgery began in 1891 on the surgical division of the Roosevelt Hospital. Cases were then drained that would not now be considered suitable cases for drainage and were drained extensively. The drainage material used was iodoform gauze in strips or rubber tubing or glass tubes. When the drain was removed the remaining cavity was repacked to the bottom until the wound was entirely healed. This treatment resulted in frequent sinuses, a more prolonged convalescence and doubtless subsequent hernias.

From the surgical division I went in 1893 to the gynecological division and here a new method of drainage came under my observation. Glass and rubber drainage tubes were sometimes, though rarely used; most frequently the Mikulicz drain, with iodoform gauze in large quantities, through the lower part of the abdominal wound. Rarely was a case drained through the vagina. When the case was dressed at the end of three days the dressing would be soaked, showing that there had been some drainage, but the removal of the drain would be followed by several ounces

of bloody serum, showing that the drainage had not been perfect. The excess of this bloody serum was sponged or sucked out and the abdomen closed completely with the provisional sutures put in at the time of the operation.

The patients would often have some reaction indicated by rise of pulse and temperature, but I do not recall any case that did badly as a result of closing the wound in this way. It should be looked upon as an advance over that method of which I have spoken, where the wound was repacked until healed as the convalescence was shortened; sinuses and hernias less frequent. It seemed to me, however then, as it does now, that this method of draining if used on account of possible infection was of little value, if not positively dangerous.

The general peritoneal cavity would be shut off in a short time, probably in six or eight hours, and any germs present would have a splendid chance to develop in the gauze and bloody serum. After the closure of the wound, there would be left a closed cavity partly filled with bloody serum,—an excellent culture medium.

Our ideas now regarding the necessity of drainage, are different than they were ten years ago. Changes in our technique have been made gradually, one step has led to another. Now fewer cases are drained; the drainage is less extensive and complicated and used for a shorter time; the route is more direct.

My own custom is to drain only cases that come under one of the three following heads:

1. Injury to an abdominal viscus such as intestine or bladder.
2. Oozing, either serous or hemorrhagic, which cannot be controlled and may pocket and act as a culture medium.
3. Necrotic and infected tissue, in non-absorbable amount, which cannot be removed. Or, to express it differently, we drain a focus which might otherwise become the source of a continuous and constant supply of germs to the peritoneum. We drain to prevent further infection of the peritoneum from the infecting focus. Infection which has already reached the peritoneum is largely beyond the influence of drainage and must be treated in other ways or left to the care of the peritoneum itself.

Plain gauze in the smallest possible quantity is used in most cases. Rubber tubing is used only to drain a preexisting cavity or sinus with a narrow exit. Iodoform gauze and glass tubes, I have discarded entirely. I drain through the abdominal wall or the vagina, whichever is the nearer to the focus to be drained, with a decided preference for the latter.

In studying peritonitis following operation we have to consider the protective forces which tend to prevent or to limit the infection and the exciting forces which tend to produce it.

Under the protective forces we have the power of the peritoneum to absorb fluids in large quantities and to dispose of solids of considerable size and, secondly, the power of the peritoneum to quickly form adhesions about such foreign bodies and substances that cannot be absorbed.

Experimentally it has been proven that the peritoneum can absorb from 3 per cent. to 8 per cent. of the animal's weight of fluid in an hour or the animal's entire weight in 24 hours. Also that solids, such as pieces of potatoes, blood clots, etc., are broken up and disposed of without harm if introduced sterile. Pyogenic germs in solutions are absorbed without harm providing the normal activity of the peritoneum has not been impaired. The same germs introduced in solids, such as infected pieces of potatoes or blood clots, protected as it were from the action of the peritoneum, will develop and produce a peritonitis. Practically these facts are of importance. We can trust the peritoneum to take care of germs in solution, assuming of course that the number is not too great, and the supply not too continuous. If, however, the germs are present in a blood clot, or in necrotic tissue, or are in solution in a pocket, and are in this way protected from the peritoneum, they are apt to cause trouble.

The protective power of the peritoneum manifested by forming adhesions and shutting off the general peritoneal cavity from any foreign body that cannot be absorbed, such as gauze used for drainage, is of the greatest importance in preventing post operative peritonitis.

The time necessary for these adhesions to be formed varies in different cases, and is of importance as it indicates the time during which it is possible to drain the peritoneal cavity. After these adhesions have formed all drainage is from the cavity occupied by the gauze and is not from the peritoneal cavity itself. I have repeatedly observed, when gauze has been used as a drain, that the drainage is profuse for a few hours but at the end of six or eight hours it rapidly diminishes indicating I think that the peritoneal cavity has been shut off from our drain. Practically the formation of these adhesions prevents the passage of germs into the peritoneal cavity from a focus which we have drained, a focus which may have been already infected or which may have become infected by germs entering through the drain itself.

There is another point in this connection, I would offer as a suggestion. Would it be wise even if it were possible, to drain free fluid from the peritoneal cavity? I do not mean fluid which has stagnated and become infected, nor fluid from an infected focus. I refer to fluid which is thrown out by the peritoneum after an operation and which doubtless makes up a large part of the drainage during the first few hours. I think it is fortunate that such drainage is possible for only a short time. The power of the peritoneum to dispose of germs, blood clots and foreign bodies in general is located largely in the leucocytes which are in the peritoneal fluid. Is it not reasonable to assume that by removing this fluid and with it the leucocytes, we cripple Nature in her attempt to overcome the infection?

Under the causes tending to excite a peritonitis, which it is our aim to prevent, we have to consider the influence of germs under three different headings:

1. Germs which may be present previous to the operation.
2. Germs which may be introduced during the operation.
3. Germs which may gain entrance or develop subsequent to the operation.

Germs, which may be present previous to the operation, may be scattered free over more or less of the peritoneum as is seen in a spreading or general peritonitis; or in a closed sac which can be entirely removed either with or without rupturing as in a pyosalpinx or an ovarian abscess; or in a cavity the walls of which cannot be removed as in an abscess following appendicitis, the walls of which are adherent coils of intestine, or a pelvic abscess, the walls of which are made up in part of pelvic wall.

Let us consider first cases in which germs are present free in the peritoneal cavity as is seen in cases of general or spreading peritonitis. In such a case, if the primary focus cannot be entirely removed, if necrotic tissue or oozing is left behind, or if there has been an irremediable intestinal injury there is a possible source of further infection to the peritoneum and we drain to protect the peritoneum from this further infection. The infection that already exists in the peritoneum is treated by washing with salt solution and then left to the care of the peritoneum itself. In a few hours, adhesions will have formed about the gauze separating the peritoneal cavity from the infecting focus. There will then exist two separate processes,—an infecting focus which is draining externally and a peritoneum which is still infected, which is not drained

externally, but which is no longer receiving constantly a fresh supply of infection.

If, however, the case of general or spreading peritonitis is one in which the primary focus can be entirely removed leaving no necrotic tissue, oozing or irremediable intestinal injury, after washing with salt solution the abdomen can be closed without drainage. There is no infecting focus from which the peritoneum has to be protected and consequently no need of drainage. We have a single process, one similar to that in the drained case after the first few hours, namely a peritoneum still infected, which is not drained externally but which is no longer receiving constantly a fresh supply of infection. Such a case is not common in pelvic surgery. We prefer not to operate in the acute stage unless forced to do so and when forced to do so, the extent and nature of the focus to be removed is usually such that some oozing or more often necrotic tissue remains which of course requires drainage. In other parts of the abdomen, such cases are common, as in a perforative or gangrenous appendicitis or a gastric ulcer with perforation. Theoretically, I can see no advantage of drainage in these cases. Any free pus can be largely if not entirely washed out with the salt solution. Any that is not reached by the salt solution must be in such a position that it could not be reached by any ordinary drainage. Any gauze introduced for drainage will, of course, drain its immediate vicinity, but it is soon shut off by adhesions from the general peritoneal cavity leaving the peritoneum except where it is directly in contact with the gauze in the same condition as if the abdomen had been closed without drainage. Gauze may be used extensively and in large amounts but it is not possible to bring it in contact with more than a small part of the inflamed peritoneum, and any germs present must reach the gauze quickly, or the adhesions will have formed and they will be shut in the peritoneal cavity away from the drain. I cannot imagine any force, either gravity, general trend of the peritoneal currents, or any other that will remove any considerable number of the germs present in the short time that elapses between the time the drain is inserted and the time when it is shut off from the general peritoneal cavity. The influence of the few that are removed is over-balanced by the disadvantages of the presence of the gauze. My own opinion then is, that this class of cases should not be drained. Practically I have had no experience with an extensive case of this type in which the abdomen has been closed without drainage, but I would refer to an interesting series

of thirty-two cases of spreading and general peritonitis due to a variety of causes, reported by Dr. Blake in an article on the "Treatment of Diffuse Peritonitis," and published in the *Annals of Surgery* for August, 1903. Ten of these thirty-two cases were treated without drainage and all recovered. In the series were seven cases of general peritonitis, of which five were drained with four deaths; two were not drained and both recovered.

Dr. Blake's rule in the treatment of these cases was not to drain unless it was "absolutely indicated by the presence of non-absorbable amount of necrotic material."

The number of cases is not large enough to draw positive conclusions, but they do show that drainage is not necessary in all cases of acute peritonitis, and they indicate recent ideas regarding peritoneal drainage.

Germs may also be present at the time of the operation in a closed sac or cyst, such as a suppurative ovarian cyst or pyosalpinx, which, with or without rupturing, may be entirely removed. If the sac is not ruptured we can ignore its contents; if it is ruptured the problem is somewhat different. In the vast majority of these cases the pus present does not contain active germs, but there is no positive way to determine at the operation which ones do and which ones do not. In general, the more acute the case the greater the probability that active germs are present, but this, of course, is indefinite. The history of the case may give us some help as to the nature of the infection; whether it was a gonococcus infection, which is not apt to cause peritonitis, or a streptococcus infection, which is apt to do so. The presence or absence of temperature immediately before the operation has been suggested as an indication of the presence or absence of virulent bacteria, but it has been found that bacteria may be present without temperature and that the acute exacerbation of an old process does not indicate necessarily virulent germs. The most scientific method is to examine the pus microscopically at the time of the operation, as suggested first, I think, by Schauta. This would add a difficult complication to the operation; could only be carried out in hospital work; if germs are not found it does not prove that they may not be present; if found there is no proof that they are still active. This method seems to me to be neither practical nor necessary. We have then no way to determine positively during an operation when material from a ruptured pus sac contains active germs, and to be consistent we must drain all of these cases or the determination to drain or not to drain must be de-

cided on other grounds. My own opinion is that the pus and its contents can be entirely ignored and no drainage used on account of it. Assuming that the intestine and peritoneum as far as possible are protected by gauze pads, any pus that is spilled can be limited and sponged or washed out. The small amount that escapes the washing would probably not be reached by drainage if used, and in addition we can trust the peritoneum to absorb germs in solution. If, however, we have necrotic material or oozing which may become infected or an irremediable injury to intestine we drain so that the peritoneum may be shut off from subsequent infection from any of these sources.

Let us consider next germs which are present in an abscess, the walls of which cannot be removed. Here drainage is necessary to avoid danger from two possible sources. The germs in the abscess wall are protected, as it were, from the action of the peritoneum and may continue to develop and become the source of the constant infection to the peritoneum. The abscess wall may form a pocket, in which fluid stagnates, is infected, and again the source of constant infection to the peritoneum. To avoid this infection we use gauze to control the discharges and to protect the peritoneum until adhesions have formed, separating the peritoneal cavity from the source of danger. The smallest possible quantity of gauze should be used so that the resulting cavity will be no larger than is necessary. At the end of 24 or 48 hours the gauze can be reduced in amount or entirely removed and the remaining cavity treated as in other parts of the body.

Germs which may gain entrance to the peritoneum during an operation concern questions of operative technique and not of drainage, and will not be considered here beyond calling attention to possible infection from this source.

Germs may gain entrance after an abdominal operation through an injury to an abdominal viscus or through the wound left open for drainage. Fortunately peritoneal adhesions usually protect the general peritoneal cavity from infection from these sources.

If the injury to intestine were through healthy tissue it could be sutured and returned without fear of subsequent leakage, but unfortunately injury to intestine usually means a necrotic condition of its wall, and sutures used in its repair are prone to tear out, and the peritoneum must be protected from possible infection from this source. This is best done with gauze so placed that the general peritoneal cavity will soon be shut off with adhesions, and any leakage will find free exit.

The opening left for the drain is a sure entrance for infection if it persists for more than a short time. Practically it is not possible for a drainage tube to be left in or for a wound to be repacked with gauze for more than a few days without germs gaining admittance to the cavity or sinus. With this in mind, it is wise to use as little gauze as possible, and to remove it as early as the case will allow, preferably without repacking, that the resulting cavity may be small or healed before it becomes infected.

To illustrate the practical working of the ideas expressed in this paper, I have analyzed my last one hundred consecutive abdominal operations, all performed during 1903. Of the 100 cases, 79 were operated on through the abdominal wall; 21 through the vagina. Of the 79 cases operated on from above, 8 were drained all through the vagina, 5 on account of intestinal injury and 3 for other causes. The 3 latter cases were drained to this extent, in 2 cases the top of the vagina was left open but no gauze at all in the peritoneal cavity; in 1 case about 12 inches of gauze was used in the abdomen. Of the 21 cases operated on through the vagina 20 were drained. In 16 cases the operation was an incision posterior to the cervix for drainage without removal of any organ. In 4 cases the operation was a vaginal hysterectomy, and I use a little drainage in practically all of these cases as I am not sufficiently sure of absolute hemostasis.

Six cases died; of these 3 had been drained and 3 had not been; of the 3 drained cases 1 was a carcinoma of the cervix, died of an embolus; another was a fibroid of the uterus with a pyo-salpinx and a suppurating ovarian cyst that had previously ruptured into the rectum; the third was a pyo-salpinx and an ovarian abscess, in the acute stage. The 2 last cases died of peritoneal infection.

Of the three cases not drained one was an ectopic pregnancy, died of pneumonia at the end of five days; another was an ovarian cyst in a patient in poor general condition; a partial autopsy showed no peritoneal infection; the third case was a hæmatoma of the abdominal wall in a case of typhoid fever on whom I made an exploratory laparotomy. I am sure drainage would not have influenced the outcome in any of these three cases.

PLACENTATION IN A UTERUS DUPLEX BICORNIS GRAVIS
MENSES 1-2.¹

BY

MAXIMILIAN HERZOG, M.D.,

Chicago, Ill.,

Professor of Pathology in the Chicago Policlinic, Chicago, Ill.; Pathologist in the
Bureau of Government Laboratories, Manila, P. I.

(With eight illustrations.)

ANOMALIES and malformations of the human uterus are by no means rare, and they are easily accounted for by the phylogenetic and ontogenetic development of this organ. The Fallopian tubes and the uterus are formed from the Muellerian ducts of the Wolffian bodies. The development of these ducts, which has been investigated, in quite a number of the lower animals, has been studied in the human embryo by Nagel, who observed that the duct is originally formed, just as in the lower animals, by an infundibular ingrowing of the coelom epithelium of the ventral edge of the Wolffian body into the mesenchyma of the latter.

Since Nagel's observation of the infundibular character of the proximal end of Mueller's duct in the human embryo has not yet been repeated as far as I know, a reference to some confirmatory evidence may not be out of place.

Microphotograph No. 1 presents a transverse section of a human embryo, 15 to 16 mms. long, obtained alive in a hysterectomy. The section shows the beginning of Mueller's duct, as an infundibulum. Fig. 2 shows a section of the same embryo a little lower down. Here Mueller's duct presents itself as a closed canal.

Normally, in the human embryo, the distal parts of the ducts of Mueller become fused to form one single uterus with a single cavity. Sometimes, however, the process of fusion is either more or less incomplete, or it does not take place at all, and then we find anomalies and malformations of varying degrees.

One of these anomalies is the uterus duplex. Pregnancy in a

¹From the Laboratory of Pathology of the Chicago Policlinic.

uterus duplex has been observed a number of times, and S. W. Kakels a few years ago reported a new case, and gave a review of the literature.¹ It appears, however, that no minute microscopic studies of the placenta have yet been made in pregnancy in a uterus duplex.

In spite of the fact that so much has been written on human placentation, there are still a number of points which are by no means yet settled to everybody's satisfaction. The description of a specimen, which in consequence of certain features may simplify some of the difficulties encountered is therefore indicated.

Such a specimen is the one which is made the subject of this paper. It is a uterus duplex obtained *per operationem* from a living woman. One side of the organ contained a normal ovum; both sides had developed a typical decidua. Here, then, is a case in which a decidua of normal pregnancy can be investigated free from any connection with the developing ovum itself. Hence fetal and maternal structures can be easily distinguished by a comparative study of the two sides.

The specimen was obtained in 1899, at a time when the author was studying normal human placentation, and placentation in superfetation, and in tubal pregnancy.

It was the writer's intention to give a very extensive description of the findings, with numerous microphotographs. It has been impossible to carry out this plan in the past, and it now has to be abandoned entirely for obvious reasons.

In the meantime, Peter's most important contribution on the earliest stage of human placentation so far observed, has appeared, and new light has been shed on the subject. Webster has also recently published an exhaustive study on human placentation.

Still a short summary of the observations in our case of a placenta in a uterus duplex, perhaps, may not be entirely without value.

The specimen forming the basis of this report was obtained *per operationem*, the case having been diagnosed erroneously as one of ectopic gestation. The symptoms appeared to demand an operation, and in performing the latter the operator, by a supravaginal amputation, removed the whole uterus. Knowing that I wanted well preserved normal young human embryos and

¹N. Y. Med. Jour., 1898.

normal early placenta, he had the kindness to at once place the specimen, the nature of which he recognized, in a formalin solution, to which soon afterwards a large amount of Mueller's fluid was added. The specimen was fixed thoroughly for months, the Mueller-formalin mixture being frequently changed. The fixation of the whole specimen proved to be most excellent, so that many hundreds of very satisfactory microscopic sections were subsequently obtained from the uterus, the placenta and the embryo.

The configuration of the uterus duplex bicornis gravis can be well seen in the two photographs, made after the specimen had



Fig. 1.—Microphotograph. Human embryo, 15 to 16 mm. long, obtained alive in a hysterectomy. Showing beginning of Mueller's duct as an infundibulum from the coelom epithelium of the Wolffian body.

been fixed. These photographs, however, show the organ slightly reduced, and not in its exact natural size.

The uterus is divided into two bilateral masses, which are oval-shaped and which unite below into a single cervix; the latter, however, also contains a double canal. The two oval masses are united at the upper part of the cervix almost at right angles. Where they meet there is a saddle-shaped constriction. The cervix, as far as removed, is $3\frac{1}{2}$ to 4 cms. long, $3\frac{1}{2}$ cms. wide. from side to side, and a little thicker from before backwards.

The cervix is divided into a double cervical canal by a strong

median partition, which, towards the upper part is about $1\frac{1}{2}$ cm thick, but which tapers towards the lower portion. It is only a few mm. thick where it has been severed by the operation. There is a complete, open cervical canal on each side of the partition, with two ora externa. The two bilateral masses forming the uterus duplex are not entirely equal in size; the right horn is somewhat larger. It measures 7 cm. from the os internum to the external surface of what we may call the fundus. The left horn, between the same points, only measures 6 cms. The width of the right horn is 6 cms.; that of the left less than 5 cms. The right horn



Fig. 2.—The same as No. 1, only a little lower down, where Mueller's duct has become a closed tube.

contains an ovum, somewhat elliptical in outlines, with diameters of $4\frac{1}{2}$ and 4 cms. When laid open, the ovum shows an embryo 12 to 13 mm. long, with an umbilical cord of the same length. A thick decidua vera thrown into deep furrows and rugæ covers the interior of the right horn. The muscularis on the right side has a maximum thickness of 2 cms. The left horn likewise shows a decidua with a maximum thickness of 1 cm.

On the upper surface near the outer corner of the left horn a small round body, 4 mm. in diameter, projects over the surface of the surrounding decidua.

In our specimen we have a double uterine cavity, one contain-

ing a normal, live, developing, young embryo, the other being empty, but having, as shown on first sight, developed a thick decidua.

For the empty cavity there could arise no question as to fetal or maternal structures, everything, of course, belonging to the latter category.

The microscopic examination was made on numerous serial sections of both celloidin and paraffin embedded material.

The amnion was found to be closely contracted around the embryo, and was sectioned with the latter. The amnion consists of a very thin layer of mesodermal fusiform connective tissue cells, and a single layer of ectodermal epithelium.



Fig. 3.—Uterus duplex bicornis as removed.

Chorion and Villi.—The chorion presents a mesodermal layer composed of fusiform and stellate connective tissue cells. The latter are embedded in an abundant matrix of granular tissue, likewise showing fibrillæ. The mesodermal chorionic tissue as a whole is identical in appearance with what is described as myxoid tissue. The chorionic mesodermal cells are arranged in parallel layers or strata, which toward the internal (amniotic) surface show a moderate amount of condensation. Around the blood vessels these cells assume a concentric arrangement, and a marked condensation is noticeable. The blood vessel walls proper consist of a single layer of flat vascular endothelium. The vessels are all densely filled with blood.

The Embryonal Blood.—The corpuscles filling the vessels of chorion and villi are all red, nucleated cells; leucocytes were not seen. The erythrocytes vary in size from 10 to 15 μ ; most corpuscles are between 12 to 13 μ . The cells are perfectly round where they have not been subjected to pressure, but where this has been the case, the protoplasm is more or less irregular and shows sharp angles and points. The protoplasm stains with eosin; some cells are very lightly stained; some very deeply. Most cells show a moderately deeply stained protoplasm. Those which are very intensely stained have very sharp protoplasmic outlines. We find two kinds of nuclei. They are both spherical.



Fig. 4.—The same after removing part of the fetal membranes. A circular piece of white paper is laid under the embryo in order to better show it.

One type is a large nucleus, measuring 6 to 7 μ . It is quite rich in chromatin, but not so rich that the nuclear membrane could not be seen. These nuclei also show one or more nucleoli. The second type is a small, very pyknotic nucleus, measuring from 3 to 4 μ . Here and there a cell shows two resting nuclei of the second type. These are not always equal in size, and one may be considerably smaller than the other.

Typical karyokinetic figures are likewise seen. This, of course, shows that in the young normal embryo the erythrocytes can and do multiply in the blood current.

Non-nucleated corpuscles are probably not present at this stage. Here and there an apparently non-nucleated corpuscle is seen, but on careful examination it is found that these cells have been

sectioned outside of the planes of the nucleus. The nucleus is generally found in the center of the cell; occasionally it is eccentrically situated.

The nucleated erythrocytes here described are of the type called metrocytes of the first generation, by Engel.

The *chorionic ectoderm* presents two well differentiated layers, the Langerhans cell layer and the external syncytium, where no cell boundaries are demonstrable. Both layers show the characters which have been frequently described also by the author in previous publications on human placentation.¹



Fig. 5.—Microphotograph. Section through placenta, showing decidua (d) and intervillous space, with villi, syncytial buds, etc. (v).

A most careful study of many and in every respect excellent sections fails to demonstrate the presence, outside of the syncytium, as claimed by Waldeyer, of a third, mostly external, layer of vascular endothelia. Such a layer could nowhere be seen.

¹Study of an Early Placenta *in situ*. Am. J. Gyn. and Obst., April, 1898.

Superfetation in the Human Race. Chicago Med. Recorder, Vol. XV.

Anomalies du Canal de Mueller, etc. Revue de Gynec., Paris, 1898.

Very Early Rupture in Ectopic Gestation. N. Y. Med. Jour., Oct., 1899.

The Pathology of Tubal Pregnancy. Am. J. of Obstetrics, 1900.

Ectopic Pregnancies Oper. Bef. Rupture. Am. Gyn. and Obst. Journal, July, 1900.

On the Histology of the Amnion. Journal of Appl. Microsc., 1901.

Those villi which become adherent to the decidua send out masses of ectoderum which form the connecting bands. The latter are composed of both the syncytium and the Langerhans layer. But the former only penetrates into the decidua, and eventually into the utero-placental sinuses. In penetrating into decidual clefts, the syncytium frequently changes its character. This change is evidently due to pressure. The nuclei, ordinarily round and vesicular, become elongated, fusiform, or almost filiform, and very pyknotic.

The intervillous space is filled with blood of an adult type. The



Fig. 6.—The same, showing villi with blood-vessels filled with nucleated red blood corpuscles.

erythrocytes are all non-nucleated; the leucocytes are few in number. A great number of villi are adherent to the decidua by means of strands or bands of syncytium.

The *compacta* of the decidua serotina shows large decidual cells, typical in every respect. Areas of coagulation necrosis are present to a limited extent only. Such areas are mostly found at the margin of the decidua, where it forms the boundary of the intervillous space. Where there is coagulation necrosis, we find the tissue extensively infiltrated with leucocytes.

The *spongiosa* of the decidua serotina shows large gland spaces filled with hyaline material, but not at all with blood. These large

spaces, as a rule, do not show any glandular or lining epithelium. Towards the muscularis the gland spaces become smaller and more irregular. They contain either a small amount of hyaline material or none at all, and their epithelium is partly or entirely preserved. The arteries in the decidua show a high degree of tortuosity, so that one not infrequently sees on a small area an arterial lumen cut transversely a dozen or more times. The capillaries are enormously enlarged, forming the utero-placental sinuses. Communications between the latter and the intervillous space can be seen frequently. Direct communications between

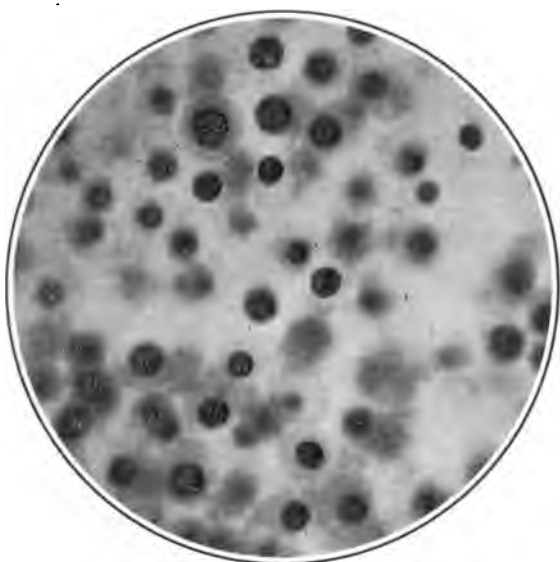


Fig. 7.—The same (Zeiss. apochr. 2 mm.; comp. occ., No. 8), showing nucleated red blood corpuscles in a vessel of the chorion.

arteries or veins and the intervillous space could not be found. As a matter of fact, direct communication between the latter and the uterine blood vessels appears to be confined to the large sinuses, which are enormously enlarged capillaries. The connection between the ovum and the uterus is formed by strands and bands of syncytium. The latter, where it comes into contact with the decidua, creeps as it were along its surface, and insinuates itself into its depressions and clefts. This arrangement can be studied in many places. It can also be seen how the syncytial bands penetrate into the large utero-placental sinuses. However, the exact manner in which the syncytium actually gets

into the uterine capillaries is a matter of some doubt. It cannot be demonstrated by the sections of the tissues of this case that the syncytium has phagocytic properties. If it had, one should at least occasionally find some degenerating cell fragments in the syncytium. However, no such definite evidence was found. It is, therefore, not improbable that the syncytium does not eat its way into the decidua, but rather grows into it like epithelial cells grow into lymph spaces, and occasionally even into blood vessels in carcinoma. Since the decidual cells of the decidua are by no means densely crowded, but separated from each other by

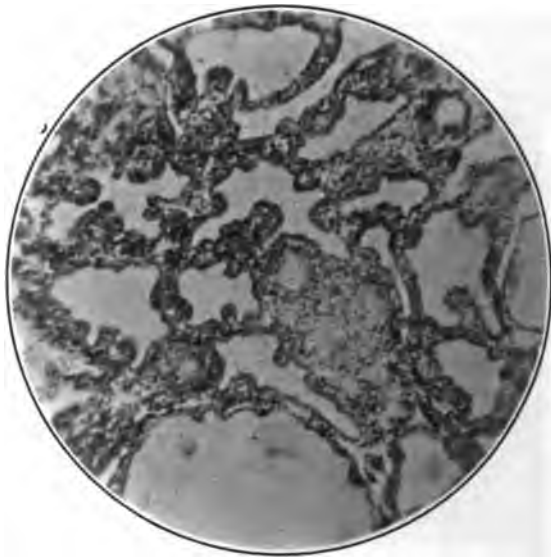


Fig. 8.—Microphotograph. Section through the decidua spongiosa of the non-pregnant state.

a large amount of intercellular substance; since vacuoles are present, and since the sinuses are exceedingly thin-walled, such a *modus operandi* of the advance of the syncytium is not at all unlikely. In fact, places were found in some sections showing syncytial buds penetrating into an enlarged capillary space by pushing the lining endothelium in front of itself. Where the syncytium has broken into capillaries, the vascular endothelium is, as a rule, well preserved and certainly does not show any signs of proliferation.

A noticeable feature in the intervillous space is the total absence of canalized fibrin; hematoidin crystals or granules were

likewise not found. I have previously given it as my opinion that the canalized fibrin found spread out over the serotina is derived from the maternal blood in the intervillous space, and not from any degenerating process of the decidua itself. The examination of several placenta obtained since then *in situ* from the living by operations has further convinced me of the correctness of this view.

In the early stage of placentation which this case represents there have not yet occurred any material changes of the maternal blood in the intervillous space, and no derivatives of such alterations, like canalized fibrin, hematoidin, etc., are therefore found. Occasionally a few syncytial buds may also be seen in one of the more superficial enlarged gland spaces. This is probably to be looked upon as a merely accidental occurrence, to which no physiologic importance is to be attached.

Decidua of the left (non-pregnant) side.—The left side of the uterus duplex contained, as stated before, and as well shown by photograph No. 3, a thick decidua. Sections exhibit a very typical picture. The differentiation into a decidua compacta and a decidua spongiosa is very distinct. The former contains enormously enlarged capillaries (blood sinuses). These can of course, in this instance not be called utero-placental sinuses, since there is no placenta fetalis present in the left half of the uterus duplex. The sinuses are closed everywhere, and do not open into an intervillous space. The gland spaces of the spongiosa are typical in every respect. Some are filled with a perfectly homogeneous, hyaline material; some show swollen and degenerating epithelial cells and hyaline spheres. In some of the spaces the epithelium has entirely disappeared; in others it is entirely intact; others still show intermediary conditions with partial loss and marked flattening of the lining epithelia. The decidual cells in the compacta are quite characteristic. The farther away we go from the compacta and the nearer we get to the muscularis, the more do the decidual cells lose their type as such and the more they assume the character of ordinary interglandular uterine connective tissue cells.

Complete series of sections of the little round mass found in the left cavity, and on microscopic inspection believed to possibly be a very young ovum, show that we are in fact simply dealing with folds of decidua. These folds form as it were a cup. From their arrangement it appears very reasonable to assume that the left uterine mucosa had gone through identical

changes like the right one, and had, stimulated by the presence of an ovum sinking into the mucosa, in the right half of the uterus, prepared itself to form a ring-walled cup, to accommodate an impregnated ovum. However, it was only the right cavity which in fact did receive an impregnated ovum. Still the left cavity, as it appears, went through all those physiological and histological changes, brought about by the presence of an impregnated ovum, excepting, of course, such changes which are due to the actual contact with the developing ovum (opening of the utero-placental sinuses, formation of the intervillous space).

The lining uterine epithelium is everywhere well preserved over the folds of decidua just mentioned, which form the cup-shaped mass. The cells are much flattened; the nuclei are large, vesicular and not very rich in chromatin. The cell boundaries are perfectly distinct and the picture seen is by no means one which could possibly convey the impression of a structure similar to or identical with the syncytium.

The enormously enlarged capillaries (sinuses) of the decidua are densely filled with blood, and are lined with a clean-cut, flat, vascular endothelium. The latter has nowhere formed syncytium-like masses; in fact, it presents itself simply as a single, clean-cut layer without any signs of a proliferative process beyond those necessary to form a single lining.

This point and that referring to the lining epithelium of the decidua and its glands are mentioned with some particular stress. The condition of things shows that the syncytium is neither derived from the uterine epithelium nor from the vascular endothelium of the uterine sinuses. The syncytium is of fetal origin, as has been shown repeatedly, and the microscopic study of our case again shows this beyond a doubt. We emphasize this once more, since recently the statement has been reiterated by several writers upon human placentation that the syncytium was not of fetal origin, but arose from proliferated endothelia of the uterine sinuses, being consequently of maternal origin.

It is, of course, well known to students of pathologic histology that the vascular and lymphatic endothelial cells show under certain stimuli a marked tendency to form multinuclear masses (giant cells). However, such a process is not shown by the endothelial cells lining the utero-placental sinuses during gestation.

The uterus duplex in our case clearly shows this. On the right side, which contains the developing ovum, we have the

syncytial buds penetrating into the utero-placental sinuses, and becoming attached to the endothelium lining of these sinuses. That no proliferation of the endothelium itself has furnished the syncytial buds is clearly shown by the sections of the decidua of the left side. We here have a fully developed decidua in every respect identical with the decidua on the right side, as far as true decidual structures are concerned. Syncytium is absent, because it is a fetal and not a maternal structure.

Cervix.—Sections of the tissues of the middle of the cervix from either side show practically the same changes. The muscularis is hypertrophied. The individual fibers are of the same size as the fibers of the muscularis of the body. A great tortuosity of the vessels is manifest by a great number of vascular lumina, seen everywhere in the cervical tissues. The mucosa shows a moderate degree of glandular hypertrophy. The surface of the mucosa is thrown into folds. But the surface and the glandular epithelium are of the type here found in the non-pregnant uterus. The interglandular connective tissue is quite vascular, and the interglandular connective tissue cells are fusiform and markedly enlarged in size, though they do not approach the very large size of the true decidua cells, as found in the decidua on either side of the uterus duplex.

CONCLUSIONS.

1. The *syncytium*, as clearly shown by a comparative study of the right and the left side of this uterus duplex, containing an ovum in the right cavity, is neither derived from the maternal vascular endothelium nor from the lining epithelium of the uterine mucosa. Positive evidence that the syncytium has phagocytic properties has not been found, but the conditions as far as demonstrable rather speak in favor of the view that the rapidly extending syncytium insinuates itself into the clefts of the decidua, and between the decidual cells, and finally penetrates into the enlarged capillaries through the stomata of their extremely thin walls. In so doing the endothelia are to some extent displaced.

2. The *cervix* shows hypertrophied muscle cells, but its mucosa does not show the structure of a decidua, but rather a very moderate amount of hypertrophy.

3. *Fetal and Maternal Blood.*—The chorion and the villi in a placenta one to two months old contain blood vessels. The statement made by Gebhard (*Pathologische Anatomie der weibl.*

Sexualorgane, Leipzig, 1899, p. 204), that no blood-vessels appear in the villi before the third or fourth months is not correct.¹ The chorionic and villous vessels of a placenta one to two months old contain nucleated red blood corpuscles only of the type of metrocytes of the first generation. Leucocytes are entirely absent. The intervillous space contains maternal blood of the type of the normal blood of the adult.

THE PROGRESS OF URETERAL SURGERY.²

BY

J. WESLEY BOVÉE, M.D.,

Washington, D. C.

FELLOW MEMBERS:

SINCE our last meeting we have suffered the loss by death of three of our ex-presidents, our beloved W. E. B. Davis, who was our president at the last meeting, George J. Engelmann, President in 1890, and J. McFadden Gaston, President in 1892. We will miss them from our scientific and social concourses. It was impossible for such men to have mingled in any body of surgeons without leaving an indelible imprint that carries with its termination a marked sense of loss. Time may lessen but it cannot efface it.

Custom has it that with the honor you have conferred upon me this year comes a duty that has caused me no little embarrassment. I have found great difficulty in selecting a subject upon which to address you, and still greater that of believing myself competent to prepare such an address as would seem proper. These, gentlemen, are evidences of my sincere regard for the membership and high scientific position of this association.

I will ask your indulgence to-day, while I briefly consider, as one must in a paper of this scope, some features of a comparatively new and a deeply interesting work—that of surgery of the ureter. I will speak of its history and its present status, adding a few suggestions as to its unsolved problems, and trust I will not overtax your patience.

¹I have likewise seen blood-vessels in the villi, not only in this early placenta, but in a number of others, all younger than three months.

²Presidential Address. Delivered at the sixteenth annual meeting of the Southern Surgical and Gynecological Association at Atlanta, Georgia, December 15, 16 and 17, 1903.

Down to 1880 but little had been done in surgery of the ureter and kidney. Simon, in 1851, had by a process of necrosis caused bilateral uretero-rectal anastomosis for ectopic bladder, and Smith in 1878, had made bilateral uretero-colonic anastomosis, but his patient, like Simon's, died. The profession, however, was anxious and expectant.

Lemaire, in 1861, had been employing carbolic acid in the treatment of wounds and other conditions. Jameson, of Baltimore, had in 1827 recommended buried animal ligature in surgical operations, and Lister had been preaching and practising the same for twelve or thirteen years, and employing the carbolic acid which had such ambitious exponents as Lemaire and Declat. For a shorter period Lister had been spraying the operating room, patient, operator and assistants. To quote Pilcher, "It was the time when spray machines were most numerous, and when their odoriferous melomo-uriferous clouds enveloped every wound and befogged every dressing. In the temple of Æsculapius the incense of carbolic acid was continually arising, nor as yet had even a faint tinge of the odor of iodoform begun to be mixed with it. Mackintosh protective and the eight layers of carbolated resinous gauze, carbolated catgut, and drainage tubing and 1-40 carbolic solution—these constituted the ordnance through which surgical victories were to be won." The value of antiseptic practice had been proven beyond the possibility of question but the theory of germ infection, upon which it was based, had not yet been fully demonstrated. Even so late as December, 1879, in a debate in which many of the leading surgeons of London participated, Mr. Timothy Holmes was able to say, no convincing proof of the germ theory, as applied to living tissue and living phenomena has, as far as I know, yet been offered. It was not until 1881 that the observations of Ogston on the relations of micro-organisms to surgical diseases were published, and not until the publication of Rosenbach in 1884, and of Passet in 1885, were the varieties and natural history of the common micro-organisms of suppuration fully described and their identity established. These had to be preceded by the epoch making researches of Koch on staining methods and culture media and it was not until 1881 that his treatise "*Zur Uretersuchung von pathogenen Organismen*" was published. Necessarily surgery was quite primitive though some surgeons were doing a large number of major operations. In 1879 Macewen did his first radical cure of non-strangulated hernia, and in 1871 and 1878 Marcy published his method of

herniotomy. Again in 1880 at the Seventh International Medical Congress, which Bassini attended, he dwelt at length upon his operation, practically that known at present as the Bassini. It was not until March, 1888, that Bassini reported to the Congress of Italian Surgeons, his first 100 cases. This report, however, was evidently the incentive to the surgical world to attempt radical cure of hernia. Various surgeons were operating on appendiceal abscesses without even suspicioning the rôle of the appendix in the formation of them. It was not until 1886, that Fitz, of Boston, published his paper entitled "Perforating Inflammation of the Vermiform Appendix, with Special Reference to its Early Diagnosis and Treatment." About this time Morton removed the appendix after mature deliberation. This was probably the first appendectomy operation of the kind. In 1879, Tait removed a pyosalpinx for the first time as well as doing his first cholecystotomy. His first operation for primary ruptured tubal pregnancy was done at about the same time. Kimball, Dunlop, Peaslee, Thomas Thornton and Spencer Wells at this time were doing a large amount of work in ovariectomy for such large ovarian cysts as are rarely met with at present. Sir Spencer Wells in 1858, and Keith in 1862, began their work in this line and in the course of fifteen years thousands of ovariectomies had been done. It was probably the work of these abdominal surgeons that led up to surgery of the ureter and kidney. Little work had been done on these structures. It is probably true that in 1670 Zambecarius and Roonhuysen two years later had proved by experiments on animals that under the best circumstances one kidney could perform the function of elimination of urine satisfactorily after its fellow had been extirpated. Laffitte published in 1759 three cases of Calculus pyonephrosis upon which he had operated in 1727, 1734 and 1741. The operation consisted in incising the abscess which was pointing at the surface and allowing the pus and calculi to escape. The consensus of opinion at that time as recorded by him, Hevin and some other contemporary writers was that "cutting" for stone in the kidney was not justifiable except when an abscess was pressing for evacuation at the surface of the body—blazing the way, to employ a common expression of to-day. It is also probable that in 1815 Hermon treated a penetrating wound of the ureter in the soldier Labiche of Napoleon's Army, and that in 1848 during the revolution of that year the Archbishop of Paris was the victim of a similar injury, both of which were gunshot injuries. It is not positively proven that the case tapped

six times by Stanley in 1844 was of this nature but presumably it was. Numerous vaginal operations had been done for uretero-vaginal fistula in this country by Parvin, Emmet and others, and by Duclout and others in Europe without much success. The case of the English Consul, Hobson, at Venice in the 18th century, and that of the free archer of Bagnolet (1819) were said to have been successful nephrolithotomies. Their authenticity has never been established and being probably similar to Lafitte's cases they apparently had no effect upon surgery of the kidney. In 1856, Gigon recommended opening the ureter through the loin to remove calculi from it and proposed as a name for the operation the word "Ureterotomie." He did not perform the operation, however. The first recorded nephrectomy was done by Wolcott, of Milwaukee, June 4, 1861. The operation was done upon the diagnosis of cyst of the liver but the condition proved to be encephaloid cancer of the kidney. The man lived 15 days, dying, according to Stoddard, who assisted Wolcott, of exhaustion, apparently caused by the great amount of suppuration which necessarily followed the operation. In 1867, Spiegelberg had a fatal nephrectomy done for hydatid renal cyst, diagnosed as cyst of the ovary. The removal was incomplete. In 1868, Peaslee removed a supposed solid ovarian tumor and found it to be a renal tumor. This patient died. About this time Spencer Wells removed a kidney with an ovarian tumor and later discovered the error. These two patients died from conditions in no way associated with impaired kidney function.

It remained for Simon to plan and perform the first nephrectomy: Margarette Kleb had had an ovarian cyst and her uterus removed in 1867 by Walther, of Offenbach, and the left ureter had been injured resulting in a uretero-cutaneous fistula, the external orifice of which was in the scar of the former incision. Thirty dogs were nephrectomized and the successful results determined him to perform the same operation on this poor woman. What a grand discovery this would be for the modern antivivisectionists of to-day. It is recorded that Gilmore, of Mobile, Alabama, in December, 1870, did the second successful nephrectomy in a woman five months pregnant. Von Bruns, in 1871, for lumbar urinary fistula with renal calculi and abscess in the person of a German officer, removed the kidney with a fatal result. In the same year Simon removed the kidney of a lady of Savannah, Georgia, for renal calculi and it is said this lady was a martyr to uncleanness in the dressing of wounds as death occurred

from acute sepsis five weeks after operation. In the seventies efforts toward segregation of the urine were being made and very ingenious methods, some of them very severe, were brought to light. That of Tuchmann, illustrated by Morris in his last work on "Surgical Diseases of the Kidney and Ureter," was especially cruel. It was a forceps much like a lithotrite; by means of its beak the ureteral orifice on one side was grasped to prevent the urinary escape from the corresponding side. In this way the urine coming from the opposite kidney was secured in the bladder. In 1875, Simon practiced extreme dilatation of the urethra, and by aid of a finger introduced into the bladder urethral catheterization was done. In 1870 we find Durham of Guy's Hospital, and Gunn, of Chicago, cutting down to the kidneys and palpating them for stone. The same year, Bryant, at Guy's Hospital, incised and explored the renal pelvis through a loin incision. At St. Luke's Hospital, New York, in 1872, Peters incised and explored a tubercular kidney for calculi. In 1873, W. W. Dawson, of Cincinnati, exposed a kidney by a loin incision and incised it liberating pus and a calculus. This was probably the first authentic nephro-lithotomy planned and executed. On May 15, 1877, Tauffer did the first uretero-cystostomy. The case was one of adherent ovarian cyst. In the removal of it he severed the ureter and being unable to find the lower portion he cut a small hole in the top of the bladder into which he sutured the ureter. Some leakage followed but he states she was completely recovered forty-five days later. The following year, Thomas Smith grafted both ureters into the colon on either side in a case of exstrophy of the bladder. He implanted one ureter and fourteen months later the other one. Renal infection occurred with little delay and death ensued. In the same year, W. H. Baker, of Boston, implanted a ureter into the bladder for abnormal ureteral orifice. It was in the side of the urethra and the successful operation was done by the vaginal route. In 1880, eleven years after Simon's first, Le Fort did the first successful nephrectomy in France. A few had been done in that country before, but with uniformly fatal results. The same year Pawlik gave to the world his method of ureteral catheterization which has done so much for studying the ureter and kidney. This year also found Henry Morris doing a well planned nephrotomy for calculi. This practically sums up the status of surgery of the kidney and ureter in 1880. From this time forward surgery of the ureter was rapidly developed. Aseptic and antiseptic surgery emboldened surgeons of every field. Invasion

of the brain, chest and abdominal cavities became less dangerous and formidable. Surgical technic became the great feature for study of all surgery. Investigators were chiefly working along the line of prevention of septic invasion of the operation area. The micro-organisms that live in the skin or might accidentally be there received the attention of the bacteriologist working by the side of the operating surgeon. Methods of ridding the skin or mucous membranes were worked out fairly well, though no plan has yet been suggested that will completely remove from such tissues these dangerous organisms. The surgeon has become reconciled to the probability of never being able to rely absolutely on hand asepsis and has adopted the use of the impermeable glove. This does not protect the wound from being contaminated from the contents of the patient's skin but with proper cleansing methods this is greatly lessened. The generation which makes no advance over the work of the preceding one is practically dead. In the field of investigation, in better cementing the brotherhood of man, of uplifting the human family—in all of these advance must be constant. No one will say that surgery has not done full credit to itself during the past quarter of a century.

In 1887, conservative surgery of these structures was materially advanced by Czerny, who did a resection of a kidney for angeio-sarcoma following injury. This, however, was not the first operation of the kind as in 1883, Sir Spencer Wells had removed about one-third of a kidney, unknowingly, while removing a retro peritoneal fibro-lipoma. Recovery was perfect. In 1881 Hahn is found doing nephrorrhaphy for movable kidney, an operation that is done thousands of times annually, and in the same year Crünfeld published his attempts at using reflected light in the vesical endoscope.

In 1882, Bardenheuer did two unprecedented operations. One of them was suturing the wound after incising and exploring the pelvis of the kidney for stone. Some leakage followed, but only for a few days. The other was making a uretero-cutaneous fistula in a case of extensive necrosis of the ureter as a result of an impacted stone in it. In this year Nussbaum attempted to unite the two ends of a ureter where an unintentional resection in continuity had been made by means of a fibrous channel. In 1884, Morris proposed rapid dilatation of the female urethra, and urethrotomy just in front of the prostate in the male, and then proceeded transvesically to remove calculi from the very lowest portion of the ureter. Emmet at the same time did vaginal

ureterotomy for ureteral colculus, removing it with a curette, and Cullingworth in 1885, planned and performed uretero-lithotomy through a lumbar incision. In 1887, Ceci removed a calculus from the pelvic portion of the ureter through the rectum. Desault, in 1887, used and recommended his kiotome for incising the uretero-vesical junction in order to more easily reach and remove calculi in the lower ureter. In 1888, Richmond, of Missouri, succeeded in removing a stone lodged near the exit of a ureter by means of rapid urethral dilatation and the introduction of a finger and tenaculum. In 1886, Israel was removing stone from the highest part of the ureter—the pelvis. In some of these cases access to the pelvis had been gained by splitting the kidney. We find this work was rapidly taken up by Bergman, Kirkham, Hall, Twynam and others, all doing it previous to 1890.

During this decade we find efforts toward exploration of the ureter and obtaining the contents of them were being made. Warkalla recommended temporary ligation of the ureters through the vagina in order to differentiate the urines. The ligature would be tightened on one to get the urine exclusively from the other. Hegar had earlier proposed it and Sanger had recommended the ligation to be done by the same route as for ligation of the common iliac artery. Warkalla proposed to employ the knee-chest position and not to tie the ligature but to make sufficient traction upon it to control the passage of urine along the ureter. He succeeded ten times out of thirteen trials on the cadaver. The instrument of Tuchmann has already been described.

Following the work of Grünfeld and Simon, Newman of Glasgow, in 1883, devised an electric lamp which could be introduced into the bladder and its interior, including the ureteral orifices, readily seen. In 1888, Bozeman, of New York, succeeded in catheterizing the ureter through a vesico-vaginal fistula and flushing out the pelvis of a pyonephrotic kidney. Grünfeld's speculum and mode of catheterization readily suggest themselves as the progenitors of Kelly's method and instruments, though Pawlik has made objection to Kelly's claims of originality. In 1880 Tuffier experimented on dogs to determine whether rectal implantation of the ureters was feasible and decided against the operation. In 1881, Gluck and Zeller had like results. In 1886, Bardenheuer failed in his experiments. In 1887, Novaro's results were more promising. Tizzoni and Pozzi, in 1888, implanted into isolated portions of the intestine with a better degree of success.

In the same year Paoli and Busachi succeeded in one of four dogs. The work of Simon and Smith and the suggestions of Roux had stimulated them to take up this work. In 1887, Edmunds and Ballance as a result of their investigations concluded that the best method of disposal of both ureters when some graft was to be made was skin implantation. In 1888, Pawlik first successfully removed the bladder and implanted the ureters into the vagina. Sonnenberg, in 1882, grafted the ureters into the urethra for exstrophy of the bladder. In 1889, Brenner practiced catheterization of the male ureter and his work has led to great improvement in cystoscopes although his contained the decided disadvantage of having the catheter tube on the convex side. At this time injuries to the ureters in the course of operations on the uterus and ovaries received the attention of the surgeons. In 1881, Spencer Wells said out of 94 published abdominal hysterectomies one ureter had been divided in six and both ureters in two other cases. Probably this is a much larger proportion of ureteral injuries than obtains at present though no doubt many are severed or ligated or constricted by ligatures in their proximity. Hochstetter found in 23 cases of ureteral fistula reported, 10 were due to vaginal hysterectomy. After Simon had proven the possibility of successful nephrectomy on man for such injuries, the only plan of treatment suggested, save the vaginal operations, was nephrectomy. The case of Tauffer demonstrated that conservation of the kidney function was possible.

In 1886, Schopf did the first uretero-ureteral anastomosis by the transverse end to end method. Although his patient died on the 42d day of tuberculosis, this case established the justifiability of the operation, and in 1889, Pawlik did the second operation with success. During this decade dilated ureters had been aspirated and incised and nephrectomy done to cure such cases. In 1887, Poggi severed the ureter in dogs and then by slightly dilating the lower stump near the section implanted the upper cut end into it and sutured it in place. These experiments were eminently successful. Tuffier's experiments, as well as those of Budinger, assistant to Billroth, made in 1894, were notable failures. Tuffier says this was due to the strong tendency of the upper end to slip out of the lower one.

The first operation on man by this method was done by A. W. Mayo Robson, in 1896. Previous to that seven had been done by the plan adopted by Schopf. In 1888, Paoli and Buschi experi-

mented on dogs by performing uretero-cystotomy. As previously mentioned this operation had been done on man but once, (Tauffer's case) and the number of uretero-vesical fistulæ had become alarmingly large thanks to the imperfect hysterectomies of the time and especially those done by the vaginal route. These Italian experimenters severed the ureter, splitting the proximal end of it and sutured it to the inner wall of the bladder. Novaro, in 1893, employed the method on man for the first time. To-day it is the best known.

In February, 1891, Tuffier did a partial ureterectomy removing a considerable portion of the upper part of the ureter with the kidney for intermittent pyonephrosis and stricture of the ureter. This was the first attempt at ureterectomy. The following year, Reynier, for descending tubercular ureteritis and tubercular kidney, removed the kidney and part of the ureter. Two months later he removed more of the ureter and five months after that operation he was obliged to remove more of the duct. Poncet, in 1893, profiting by the unfortunate experience of Reynier, removed the whole of the ureter for the same indication. The kidney had been removed in 1891. It was not until 1895 that the first complete primary ureterectomy was done. The operation was done by our esteemed fellow member, Kelly, of Baltimore. In 1891, Küster, by the exigencies of the confronting situation made an epoch in ureteral surgery. A boy of 13 years, having a congenital absence of one kidney and having been subjected three years before to nephrotomy for hydronephrosis was suffering from a ureteral fistula and an impermeable ureter. Küster decided upon plastic operation for the relief of both of these defects. He removed three centimetres of the ureter at the site of stricture, and splitting the end of the distal portion and rounding the angles thus formed, he sutured it to the renal pelvis and was gratified by securing bloody urine from the bladder. Several months later he closed the fistula and the boy remained well.

Simon had operated on hydronephrosis by attempting to correct the angulation of the ureter which had been the obstructing factor, and Trendelenburg, in 1890, had opened a hydronephrotic sac by lateral laparotomy and divided the ureter down to the lower part of the sac to the inner wall of which he sutured the divided borders of the duct. The ureteral opening was thus displaced from the side to the bottom of the sac in order to maintain patency of the duct. The patient died of ileus. Küster had planned to follow Trendelenburg's method but was deterred by

finding a stricture lower in the duct, and later he did the operation noted above. It remained for Fenger, in 1892, to first perform successfully an operation for valve-like constriction of the ureter. The following year Herman Mynter, of Buffalo, did the second successful operation of the kind. My own experience is in accord with the value of these two difficult operations.

As stated by Fenger and Küster the successful ones were done through a lumbar incision. The two cases of Küster and Fenger positively demonstrated the feasibility of this method of dealing with dilatations of the ureter from angulations and valve-like constrictions. In 1892, Alsberg reported his case of dilatation of the ureter for stricture. 1893 furnished us with the report from his pen of the beautiful work Kelly had done in ureteral catheterization. He employed the catheter of Pawlik through the speculum of Simon and by bladder illumination by reflection from head mirror. This work of Kelly's popularized ureteral exploration. In this decade plastic surgery of the ureter was carefully studied. Davenport did infrapubic ureteral cystostomy for an abnormal ureteral opening near the external meatus urinarius in 1890 with success; and in 1892 Baumm reported an operation he had done in a case of double ureter, the supernumerary one ending at the mouth of the urethra. He did a uretero-vesical grafting by suprapubic cystostomy. Colzi, in 1895, had a case nearly like Davenport's, in which he subjected the patient to a great deal more traumatism. He incised above and outside the labium major, detaching the genitals from the arch of the pubes, cutting away some of the bone from the lower surface of the arch to reach the base of the bladder. In 1893, Novaro had two successful bladder grafts for uretero-vaginal fistula. In 1900 I was able to collect 88 cases of uretero-cystostomy, and in 1903, 111 cases with seven deaths, in four of which the operation was done in the course of an abdominal operation for other conditions and still another death was due to an independent cause.

Different methods were devised by Veit, Witzel, Fritsch, Boari, Kelly and others; but practically the extraperitoneal route is the only one employed. For conservation of the mechanism at the uretero-vesical junction secondarily and of the kidney function primarily union of the ends of the divided ureter received careful study during the nineties. In reviewing the subject in 1900, I found the transverse end to end as used by Schopf and others was not cast aside but had been employed twelve times. The Poggi, or end in end plan was practiced three times, and modified

by splitting the outer portion six times. The Van Hook method of end in side anastomosis was done five times, and the oblique end to end but once. D'Urso and De Fabie experimented with the side to side plan with success but thus far the operation has not been done on man.

During this time further attempts were made to achieve success in bowel grafting of the ureter. The experimental work of Morestin, Roscisewski, R. Harvey Reed, Thompson, Giordano, Van Hook, Krynski, Boari, Lestrade, Martin, Peterson and others was pushed with great enthusiasm though with direful results.

One man, Küster, in 1891 removed the bladder and prostate for malignant disease and grafted both ureters into the rectum. Death occurred in five days. The following year Chaput performed the operation twice with one recovery. In this case but one ureter was implanted. In 1894, Maydl reported five cases of implantation of the ureters and trigonum into the rectum for ectopic bladder, death occurring in one of them from prolonged narcosis. In 1895 Boari, by means of his button, grafted the left ureter into the descending colon for vesico-vaginal fistula with complete destruction of the urethra. The case is reported as a success. Chalot extirpated the bladder and grafted the ureters into the colon with success in 1896. Fowler devised a method the same year and succeeded with it in one case. Turetta, Peters, Krause and others reported methods and cases. Pozzi devised a modification of Maydl's plan that was used in a number of cases successfully. In my review of 1900, as previously mentioned, sixty-five cases were collected. These had a mortality of 18—a few of them succumbing to shock.

Ascending renal infection was proven to be the most dangerous complication.

Rydegier, Laurenzi, LeDentu, Pozzi, Chalot, Kufferath, Budinger, Harrison, Noble and others adopted the suggestion of skin grafting of the ureters between 1890 and 1900. Vaginal grafts by Chavasse and Kossinski, and urethral grafts by Estor, Eastman, Lindnet and Von Iterson were made during the same period. During that decade the employment of the X Ray to determine the presence of ureteral calculi was enthusiastically investigated. Kelly's wax tipped bougies are valuable for this purpose. Uretrectomy has become a quite common operation.

The segregators of Harris and Downes, devised during the past few years, have assisted very much in differentiating the

conditions of the two kidneys. They were the outcome of certain objectionable features of ureteral catheterization and are quite satisfactory.

This rambling tale of the past as relating to surgery of the ureter is already too long but I hope to presume a little further on your time and patience to consider the present status of this work. What I will say of each subject must be brief as the literature has already become voluminous and the variations, both pathological and surgical, have received much consideration. I can not hope to give this in detail nor expect you to listen to a long story no longer new to you.

The treatment of ureteral calculi may first claim our attention since the diagnosis and treatment of this condition are very much studied at the present time. The employment of the X Ray is the simplest procedure known for purposes of diagnosis and were it accessible at all times—and completely reliable, no other method would be comparatively valuable. Unfortunately such conditions as calculus anuria may render a patient in a secluded place so ill that this method of investigation is necessarily precluded. Moreover, no doubt calculi may be of sufficient size to block the ureter and give no shadow in the radiograph. That the calculus, composed of organic matter, largely or wholly, does escape detection by this method is generally understood. For this reason especially must other plans of examination be employed although the necessity of constant manipulation of the ureter is a *sine qua non* to dexterity in treating other conditions of this structure. Palpation will ever have its important position. Exploration is an important method in such investigation. Tubular calculi may, however, escape discovery by this plan. The wax tipped bougie, suggested and used by H. A. Kelly is especially sensitive and no doubt if it touches a calculus it will receive a telltale impression. In the treatment of ureteral calculi the proper plan is extraperitoneal uretero-lithotomy as infected urine is usually associated with this condition and easily produced peritonitis if permitted to come in contact with the peritoneum. If pus be not present the establishment of uretero-cutaneous fistula will seldom be necessary though careful drainage of the wound will be advisable. This rule applies to every part of the duct. I am firmly convinced the ureteral wound should be made longitudinally whenever possible and sutured after lithotomy. If much necrosis of the ureter be manifest as has often resulted from impaction of a calculus, each case must be treated according to the judgment of the

surgeon, and such modifications as resection or exsection, with uretero-ureteral anastomosis or uretero-cystostomy may rarely be required. It may be necessary in some cases to remove the portion of the duct necrosed, when on one side, and close the opening by the Heinecke-Mikulicz suture, thus increasing instead of decreasing the caliber of the duct at the site of erosion. Nor should these plans be neglected because of dilatation of the duct as usually some removable cause for the dilatation is present and after correction allows the return of the usual caliber. Frequently pyonephrosis accompanies calculous ureteritis. Incision and drainage, and probably nephro-lithotomy will be needed in addition. The routes employed depend upon the location of the calculus, the bladder, vagina or loin being selected. I can only endorse the rectal route, as employed by Ceci, when examination reveals a calculus ulcerating into the rectum or threatening to do so. For ureteral fistula nothing need be done unless obstruction of the duct below the fistulous opening exists. In such a case the caliber of the canal must be restored. Usually the fistula will then close spontaneously, though so much cicatricial tissue may be deposited about the opening as to prevent closure. Suture or perhaps resection may be required in that case.

Strictures and angulations require careful consideration. The former will occasionally yield to dilatation. On this subject I confess to much skepticism. I believe that in multiple, slight strictures it should be tried—of course by the transvesical route. If dense, it will probably be much better to expose the lesion by incision and exsect or incise lengthwise the duct and suture by the plan used by Fenger. Surely for angulations this plan has no superior. In two cases I have been rewarded by perfect recovery. If the kidney be displaced this defect should be corrected and may be the only necessary procedure.

In subcutaneous injury of the ureter no treatment is advisable unless evidence of extravasation of urine or of ureteral obstruction exist. When either of these are present an extraperitoneal incision with appropriate treatment of the injury should be made. If the injury be made through an incised or punctured wound no special indication for treatment is presented, unless it be an unusually large wound or one probably infected. In either case no suggestion is needed as to the proper procedure. If complete division of the duct is made the ends must be united by one of the five methods previously mentioned, when possible. As to which is preferable in any given case will depend on various conditions.

The operation has now been done about fifty times and in but one has stricture been known to follow. This was the first—Schopf's—of transverse end to end union under many unfortunate circumstances. As to economy of length of ureter required for anastomosis the relative order of the methods is transverse end to end, oblique end to end, end in end, side to side and end in side. As to subsequent leakage the data available is insufficient to determine which is preferable. But four of the five methods have been employed on man and one of them, the oblique by myself, but once. In that case no leakage occurred while by every other method leakage has been reported. Van Hook states leakage can not possibly occur, yet Henry Morris reports in his book, "*Surgical Diseases of the Kidney and Ureter*," 1901, II., 545, a case operated on by him in 1900 by this method that developed extravasation of urine into the lumbar cellular tissue on the eleventh day and nephrectomy had to be done. If the upper end be large and the lower small then Van Hook's plan is impossible as is that of Poggi. The transverse end to end is little better and resort should be made to the oblique end to end or the side to side or lateral anastomosis. On the whole I am inclined to believe the transverse end to end will be indicated in the largest number of cases.

If the site be in its lower two inches, then uretero-cystostomy will be required. If the loss of ureteral length be too much for either of these operations the plan of Van Hook for making a new lower portion from a long piece taken from the bladder wall is to be considered—or, when the injury is too high for that, grafting into its fellow, the bowel or on to the skin, or nephrectomy or ligation of the ureter will be required. Their relative value is in about the order in which they were mentioned. The almost positively resulting renal infection from bowel or skin grafts causes one to reflect at length before deciding to employ either of them. The method of isolating and sterilizing a portion of the intestine to receive the ureter and urine is meeting with favor. The plan of Gersuny of using the sphincter ani as a sphincter of the improvised reservoir made from the intestine is especially commendable. The ureter has probably never been implanted into its fellow but when possible this will probably be the operation of the future as an alternative for skin or intestinal grafting. In bladder grafting of the ureter no method superior to that of Paoli and Busachi has been exploited. The resulting union can never be as perfect as the natural one and thus far this operation is inferior

to uretero-ureteral splicing. The danger of stenosis with dilatation of the urinary passage above or of too large an opening with reflux of urine is to be considered. These results have been noted by Pozzi and Polk.

For partial division of the ureter suturing should be applicable. Most writers that have discussed this subject said partial division, if involving more than half the circumference of the duct, should be made complete, and treated as such. The logic of suturing together the ends of a severed ureter and of not closing partial divisions, I confess, is not clear to me. To vaginal and urethral anastomosis I believe the only objection that can be made is the inconvenience resulting. Possibly the results of Nichaus' experiments may not be overdrawn but I have considered them as being capable of severely taxing one's credulity. I cannot bring myself to believe that the posterior portion of the urethra is so easily transformed into a well sphinctered urinary reservoir. Pawlik's case of vaginal grafting of the ureters after urino-cystectomy had no infection. And, although the urethra was attached to the closed vagina self catheterization was a necessity. Mann has made this graft in two cases but both died in a few months from extension of the original malignant disease.

Abnormal ureteral terminations of congenital origin may be corrected by uretero-cystostomy, usually by the vaginal route. Fortunately in these cases the ureter is abnormally long and therefore the difficulty is much less than is the same operation for other indications.

The ureter must be removed in whole or in part for tumors, tuberculosis and malignant disease. In 1899, I was able to collect from literature but 24 cases of partial or complete ureterectomy. Now the number has swollen to nearly 100. When the malignant disease involves the upper portion removal of the pelvic and lower portion is rarely required. The case of Abbe's is significant in this respect. The converse, however, does not obtain as the lymphatic circulation is upward. In tuberculosis of the upper portion of the ureter I am very much in doubt as to whether the lower portion should ever be left in situ. Calculi and suppuration may work such destruction as to require removal of the larger part of the duct but usually not the whole of it. The extraperitoneal route should be the preferable one as the danger of infection by it is less. If the abdominal route is much the easier for the surgeon the mortality from it is much the greater.





PUERPERAL HEMATOMA—DORLAND.

In complete ureterectomy or nephro-ureterectomy in women probably the loin and vaginal incisions constitute the best plan. In my last case I separated the lower two inches through a vaginal incision and then separated and withdrew the kidney and ureter by the loin route. This, I believe to be the best of all.

For ureteritis the treatment has been largely of irrigation and topical applications. I have been disappointed in this work and have grave doubts of its being the best. Probably the violence done to the lower part of the ureter by this instrumentation counterbalances the benefits. I have had a few cases of trigonitis that have come to me after ureteral irrigations are said to have been made. I have in consequence been led to speculate as to whether a non-alcoholic, non-nitrogenous diet with diuretics and rest in bed may not be superior treatment for simple ureteritis.

1404 H STREET.

PUERPERAL HEMATOMA. TARDY DEVELOPMENT OF A FATAL CASE OF THE VAGINO-VULVO-PERINEAL TYPE.

BY

W. A. NEWMAN DORLAND, A.M., M.D.,

Associate in Gynecology, Philadelphia Polyclinic; Assistant Obstetrician to the Hospital of the University of Pennsylvania, Etc.,
Philadelphia, Pa.

(With Plate.)

THE extreme infrequency of puerperal hematoma makes it almost imperative that any new case developing in the practice of an obstetrician or gynecologist be placed on record in order that the literature of the subject be made as rich as possible.

The term *puerperal* hematoma is preferable as being generic, including the various subvarieties which are named according to the site of development. Thus, the blood-tumor may form in the pampiniform plexus of the broad ligament. Such a condition is known to the profession as *hematoma of the broad ligament*, and may occur post-operative as well as during or after the process of labor. The tumor may be localized entirely in one or the other labium majus, as in a case described by Hirst in his Textbook of Obstetrics. This is the true *vulvar* or *labial hematoma*. It may, though rarely, be seen only within the vaginal tissues, and is then designated as a *vaginal hematoma*. Finally, it

may appear mainly in the perineum at the site of one or the other ischiorectal fossa. This is more common and constitutes the well-known *perineal hematoma*. It is not unusual for these types to be more or less fused, as in the case about to be described, the condition existing in which is admirably presented in the colored plate accompanying this article. The hematoma in this instance was a combination of the vaginal, labial and perineal types—a *vagino-vulvo-perineal hematoma*. The history of the case is as follows:

Mrs. P., aged 28 years, the wife of a physician, presented an excellent family history on both sides. The patient had had all the diseases of childhood, and had always been somewhat delicate, although appearing very well nourished. When nine years of age she had an attack of inflammatory rheumatism which left a heart-lesion in the form of a mitral regurgitation. Her menstrual history began at the age of fifteen, and the periods were always attended with pains on the first day of the flow and the preceding day. On these two days the patient was compelled to confine herself to bed. In May, 1903, she was delivered of a premature five months' fetus which had been dead for two weeks or more. There were no complications at the time of this delivery nor were there any unpleasant sequelæ. The following August another impregnation occurred. For the first two months of the gestation the patient suffered severely from nausea and gastric distress. During this time she also passed through a severe attack of urticaria. Fetal movements were detected during the fourth month of the pregnancy but at no time during the gestation were they as vigorous as they should normally have been. Some edema of the legs was detected during the fifth month. An examination of the urine at this time showed a specific gravity of 1.020 and an absence of albumin. A trace of albumin was detected in the sixth month, but this disappeared under the administration of Basham's mixture. In the seventh month the fetal movements became very indistinct, and at the same time considerable edema appeared in the ankles and lower portions of the legs. Albumin was present in the urine, the specific gravity of which remained at 1.020. The patient now complained of some abdominal distress and shortness of breath. These symptoms were relieved by the application of a firm abdominal binder. Constipation, which had always been a prominent feature of the case, now became quite marked, and this was associated with a mild degree of general pruritus, anorexia, and malaise. Tonics and

laxatives were exhibited without much effect, and the question of inducing labor was seriously considered. The uterus showed a considerable degree of irritability, and occasionally the patient would experience paroxysms of sharp, painful contractions which were localized to the lower segment of the abdomen. On the third of April the patient fell into labor, the first pains appearing at eleven o'clock in the evening. These gradually increased in intensity, although at no time, her attending physician reports, were they of any degree of severity. The parturient tract distended readily, and a stillborn male child of eight month's development was expelled at 1:15 o'clock on the afternoon of the fourth of April. The placenta and membranes came away normally, and a dose of ergot was administered. The pulse at this time recorded 80 beats to the minute, and was of good volume. There were no symptoms of internal hemorrhage or collapse. The after-pains were not marked. At 4 o'clock in the morning of the fifth of April the patient began to bleed freely from the uterus. Stypticin and ergot were exhibited with good effect. At this time a dark spot was noticed on the right labium majus, which slowly increased in size. This was associated with severe pain in the right ovarian region and abdominal distention which soon assumed the proportions of a marked tympanites. The general surface of the body now became moist, and the skin acquired a pasty appearance. The pulse at this time was 100, the temperature 98.4° , the respirations 24. Stimulants including whiskey, digitalin $\frac{1}{100}$ gr., and strychnin $\frac{1}{30}$ gr. were administered together with normal saline solution by the bowel and by hypodermoclysis. By evening of this day, at which time the writer first saw the patient, the tympanites had become extreme and was associated with nausea and eructations of gas. The application of a thick coating of antiphlogistine over the entire abdominal surface afforded great relief from the pain and distension. An enema of the milk of asafetida given at this time was fruitful in producing the expulsion of great amounts of flatus. Calomel gr. $\frac{1}{20}$ with champagne relieved the nausea. Under this treatment there was a general amelioration of the symptoms. The pain in the abdomen and labium left entirely, the temperature fell to 97.6° , and the pulse to 90. The abdominal distension disappeared altogether, and the bowels opened spontaneously, the evacuations being semi-solid and of a dark-gray color. Concentrated nourishment was given at frequent intervals. By the morning of the sixth of April the dark swelling on the labium had

extended into the vagina and back on the external perineal surface as far as the rectum, which became patulous. The tumor was tense to the feel but palpation did not elicit tenderness. At noon of this day the patient experienced a sinking spell, preceded by a sensation of tingling in the right hand and arm. Her speech became thick and then there was inability to speak at all. Oxygen by inhalation produced reaction, but it was noticed that the movements of the entire right side were limited. The mind was clear, and there was no sign of facial paralysis, nor did the tongue deviate to the side of the mouth. The pulse that evening registered 80 beats, the temperature was 98° F., and the respirations were 26. The patient, however, appeared very weak. Adrenalin, 15 drops by the mouth, was added to the treatment at this time, and the oxygen and normal saline solution continued. The right side was now lifeless. After a restless night the patient entered the morning of the seventh of April in an exceedingly weakened condition. The temperature was kept up by the application of external heat. At noon unconsciousness supervened and death ensued at six o'clock in the evening, seventy-six hours after the delivery of the child.

An autopsy, confined to the abdomen and pelvis, was made by Professor Harris A. Slocum of the Philadelphia Polyclinic, 48 hours after death. He was assisted by the writer. The peritoneal cavity was found to be free from blood, nor was there a hematomatous formation in either broad ligament nor any involvement of the bladder. There was marked discoloration of the right oviduct, and also of the basal peritoneum of that side. The right ovary was large, the left ovary normal in size. Small fibroid nodules existed in the fundus and anterior uterine wall. Examination of the hematomatous mass internally showed that the boggy tumor began at the upper right side of the vagina and extended outward and downward to lose itself below in the pelvic structures. Examined from without the clot was found to extend from the pubic ramus back to the coccyx and out toward the obturator foramen. The mass was apparently thoroughly encapsulated and tightly adherent to the walls of the sac. It was in size 7 by 3½ by 1 inch. The uterus was opened and found to be normal in every respect. The placental site was at the fundus anteriorly and to the right.

It would be interesting to ascertain whether or not in these rare cases of puerperal hematoma there always preexists, as in the present instance, a chronic valvular lesion or some chronic renal affection. As is well known both of these conditions pre-

dispose to a varicose condition of the vessels of the lower portion of the body, and this, in association with the physiologic thinning of the venous walls in gestation, would strongly predispose to rupture and hematomatous formation. A common cause of death in puerperal hematoma is cerebral embolism. This was the primary cause of the fatal termination in the case reported in this paper. The total amount of blood lost was not sufficient to cause death. Whether the embolus comes from the hematoma or from the placental site is another question extremely difficult of solution.

PUERPERAL HEMATOMA IN A MARE.

In connection with the foregoing case the following remarkable occurrence of a similar condition in a pregnant mare will be worthy of record. In August, 1902, the Second City Troop of Philadelphia was ordered out for service in the coal regions during the famous anthracite strike of that year. Among the horses taken out at that time was a mare, which, unknown to the Quartermaster of the troop, had been covered late in the spring. The troop was stationed for forty-three days on Columbia Park Hill just above the city of Shenandoah, Pennsylvania, which was then the center of riotous activity. The trooper to whom the mare had been allotted had noted that the animal was increasing in size, but the possible existence of gestation had not occurred to him.

One afternoon after an eight-mile hurried ride to and from Mahanoy City to thwart an attempt to destroy a coal-train, the mare collapsed a couple of hundred yards out of camp. With considerable difficulty she was rolled upon a strip of canvas and carried into the horse-fly. She showed by her actions that she was suffering severely, but the veterinary, who had been summoned from town, was unable to state what the condition was. Toward evening a considerable bloody discharge occurred from the vagina, and a pouching of the rectal mucosa was noted. This bulky mass was dark blue in color and protruded for several inches through the greatly distended anus. Relief could not be afforded the animal, and in the early morning hours death ensued.

The body was carted down to the veterinary's shop in the outskirts of Shenandoah, where it was quartered and a thorough investigation made as to its condition. The mare was found to be pregnant about four and a half months with an intrauterine gestation. The Fallopian tubes and broad ligaments were normal in

every respect. Beneath the peritoneum and spreading to involve the right hip-joint and the tissues around the anus was a tremendous blood-clot coming from a rupture of a large branch of the right iliac vein. This rupture had doubtless occurred in a thinned-out vein during the strain of the rapid trip to and from Mahanoy City.

While absolutely ignorant of veterinary pathology, I would venture to say that the condition occurring in this mare must have been one of extreme rarity. The similarity between it and that found in the patient recently seen is at least remarkable.

130 SOUTH SEVENTEENTH STREET.

CYSTIC DEGENERATION OF THE OVARY. AN ANATOMICAL
AND CLINICAL STUDY OF 180 CASES.¹

BY

PALMER FINDLEY, M.D.,
Chicago, Ill.

SYNGNYMS: Microcystic degeneration; cystic ovaritis; follicular degeneration of the ovary; hydrops folliculi ovarii; follicular ovaritis.

The first recorded observations on the anatomy of follicular degeneration of the ovary were made by Rokitansky in 1855. Shortly after this time the clinical significance of the lesion was pointed out by Hegar, Battey, Tait and Cruveilhier. By these observers the lesion was given a most serious aspect. Not only did they hold the condition responsible for many local disorders, but an astonishing array of general nervous phenomena were ascribed to it. Supported by such authorities, it is no wonder that the profession became overzealous in its efforts to remedy the condition. Ovaries were sacrificed unwantonly whenever large follicles were found, not only because of local discomfort but more often because of alleged nervous phenomena, such as hysteria, headache and insanity, which were thought to be excited by follicular cysts in the ovary. In this harvest time of the ovariologist conservative men in gynecology questioned the rationale of the procedure. Olshausen, Pozzi, Martin and many others denounced the sacrifice of such ovaries for general nervous disorders as unwarranted by the comparatively insignificant lesions

¹Chicago Gynecological Society, March 23, 1904.

found in the ovaries, and by the impossibility of demonstrating a relation of cause and effect between the local lesion and the general phenomena.

It may now be fairly stated that the profession in general have come to regard cystic degeneration of the ovaries in a less serious light than was first presented, but yet accord the lesion a rightful place among the morbid conditions of the ovary.

Nagel and our distinguished President, Emil Ries, hold that the condition known as follicular degeneration of the ovaries should never be regarded as morbid, and therefore has no clinical entity. A careful review of the literature shows these two observers to be singularly at variance with the consensus of opinion.

I have made microscopic and clinical studies of 180 cases in which one or both ovaries were removed or resected for follicular degeneration. I am indebted to Dr. Webster for the privilege of using his material. Of the 180 cases, 160 were operated by Dr. Webster, 20 by myself; only 39 of these cases were uncomplicated. In 141 of the cases the ovaries were operated in connection with other lesions. My observations have extended over a period of twenty-two months. From the clinical records I have tabulated the clinical signs which appear to be directly referable to the ovary. In this I have met with difficulty because of the frequent presence of associated lesions which often mask those ordinarily ascribed to the ovary. In many instances it has not been possible to say that the cystic ovaries have contributed to the symptom-complex because of the presence of more serious lesions.

After the removal of all existing lesions, and relief from all symptoms obtained, it has not always been possible to say to what extent the resection or removal of the ovaries contributed to the recovery. For example, cystic degeneration of the ovaries associated with salpingitis, and retroversion of the uterus with adhesions might give rise to backache, sterility, and dysmenorrhea, and contribute to general nervous phenomena, but it is manifestly impossible to determine to what extent the ovaries contributed to the suffering and disability. However, it may be expected that anatomical and clinical studies of a large number of these cases would yield some valuable suggestions, and especially so when compared with similar studies of uncomplicated cases.

Before entering into a detailed report of these cases, I will very briefly refer to the normal histology of the ovary and to the opinions expressed by various authorities as to the histogenesis, histology and clinical importance of the lesion.

ANATOMICAL STRUCTURE OF THE OVARY.—The classification of Waldeyer will be accepted. He recognizes a vascular and a parenchymatous layer.

1. *Vascular Layer.*—In the hilus of the ovary are large numbers of veins closely packed together and accompanied by very little connective tissue. A limited number of muscular fibres follow the course of the veins and form what is called the corpus cavernosum or bulbous ovarii (Rouget). The arteries entering the hilus assume a very tortuous course and carry muscular fibres to their finest ramifications.

2. *Parenchymatous Layer.*—This portion of the ovary is composed of follicles and stroma. The follicles vary in size from a poppy seed to a pea, according to Waldeyer. Several layers of small follicles are found near the surface of the ovary. Deeper in the ovary are larger follicles which, as they ripen, approach the ovary and burst. The smaller follicles are said to be in a "state of rest," and consist of an ovum surrounded by many layers of cubical epithelium. These small follicles mature into what may be called "ripened follicles." About the follicle is a tunic composed of an inner and outer layer known respectively as the theca interna and the theca externa. The former is composed of cellular connective tissue, rich in blood supply; the latter of fibrous tissue, poor in blood supply. Within the tunic are several layers of cubical epithelium known as the membrana granulosa. At one extremity of the follicle these cells are heaped about the ovum and form the discus proligerus. The ovum is surrounded by a membrane, the zona pellucida, within which is the yolk, nucleus (germinal vesicle) and nucleolus (germinal spot).

The stroma is made up of connective tissue interspersed with a varying number of spindle cells. Elastic fibers in limited numbers are found in the stroma.

The surface of the ovary is covered with cubical epithelium, which by invaginating into the fetal ovary forms the follicles. According to Waldeyer, this invagination does not go on after the birth of the child, hence no new follicles are found in postnatal life—a fact of some importance in the consideration of the subject in hand.

It may be properly questioned as to the extent to which the follicles may increase in size and number within normal limits. Can normal ripe follicles constitute what is known as follicular degeneration of the ovary?

Nagel would have us to believe that the distended follicles are

always physiological, but the numerous anatomical and clinical researches which have been made by competent observers prove the fallacies of his reasoning. That ovaries may contain several ripe follicles is well known, and to regard such as follicular degeneration is no more justifiable than the position of Nagel.

In May, 1902, Dr. Goldspohn reviewed the arguments of Nagel in detail before this Society, and I will here briefly refer to them.

Nagel asserts that he invariably found healthy ova in the enlarged follicles, and since the ova arise from the membrana granulosa the entire follicle must be healthy. The fallacy of such reasoning must be apparent to all. Furthermore, it has not been the general experience of observers that healthy ova are found in the greatly enlarged follicles. In my own observations it was a rare exception to find ova in follicles distended beyond the physiological limit, *i. e.*, to the size of a pea, and when present, they were invariably in a degenerated state. These observations were made upon ovaries and portions of ovaries removed by operation and hardened *en masse* before postoperative degenerative changes could take place.

Follicles no larger than a pea were usually found to contain healthy ova, but when enlarging beyond this the ova invariably disappeared or were found in a degenerated state.

Nagel further states that the liquor folliculi is a direct product of the epithelium composing the membrana granulosa, and when these cells degenerate there can be no formation of liquor folliculi, but, on the contrary, the follicle will atrophy and disappear.

Von Kahlden and Pfannenstiel have demonstrated the origin of the liquor not only from the membrana granulosa, but as well from the blood vessels within the tunica interna. Therefore, congestion of these blood vessels will increase the secretion within the follicle. The integrity of the epithelium is not essential to the formation and persistence of the liquor folliculi.

Nagel is of the opinion that the larger cysts develop from the corpora lutea. This is no doubt true in many instances, but I have repeatedly failed to demonstrate lutean cells in the wall of these large cysts.

Nagel proceeds with the attempt to prove that the larger so-called follicular cysts also arise from inclusions of the germinal epithelium in the ovarian stroma. He says he has invariably found these epithelial inclusions in chronic ovaritis, but never in the healthy ovary. He describes these cell inclusions as being formed of cubical epithelium and having an albuminous secretion.

Retention cysts are thereby formed which are often mistaken for Graafian follicles. They differ from the Graafian follicle in never containing ova, discus proligerous, and membrana granulosa, and they are immediately surrounded by ovarian stroma rather than by a tunic. Nagel does not admit that new follicles can form after birth, and in this he is supported by Waldeyer, Bischoff and Grohe. On the other hand, Schrön, Pfflüger and Kölliker believe them to be formed throughout the life of the individual.

In reviewing the opinions of the observers who have written upon the subject, including Virchow, Gebhard, Abel, Klob, Ziegler, Ruge, Pfannenstiel, Amann, Martin and Frakin, I find it to be the consensus of opinion that follicular degeneration is the result of chronic ovaritis; that these follicles do not arise from cell inclusions, as stated by Nagel, but are the direct result of passive congestion and hyperplasia of the stroma.

As a suggestion of the pathological nature of follicular cysts, Martin observes that they are not confined to the outer zone of the ovary, as is the case with ripened follicles, but, on the contrary, are distributed throughout the stroma. This he regards as of greater significance than the number and size of the follicles. Martin does not attempt to fix the normal limits in size for a follicle, but says they are manifestly pathological when they approach the ovary in size, whether they contain ova or not.

Ziegler described a follicular cyst the size of a man's head, and Martin reports one which weighed seventeen pounds.

Before concluding my review of the literature, reference must be made to a most excellent article by Max Walthard¹ on the Etiology of Adenoma of the Ovary.

The author examined serial sections of 80 ovaries taken from patients at all ages, ranging from the new born to 68 years of age. The ovaries were, for the most part, normal; some contained a few small cysts. He found the surface epithelium of the ovary invading the stroma in the form of tubules. These may exist long after puberty, and tend to the formation of cysts lined by flattened epithelium and surrounded by ovarian stroma. Small groups of epithelial cells were seen in the ovary and having no connection with the germinal epithelium or follicular epithelium. At any time in the life of the individual these cell nests may hollow out and form cysts. There were also nests of pavement epithelium and canals lined by ciliated columnar epithelium from

¹Zeitsch. f. Geb., Bd. 49, H. 2.

which cysts were formed in the stroma. The surrounding stroma did not differ from the normal stroma of the ovary.

In the 180 cases of cystic degeneration of the ovaries in which complete or partial removal of one or both ovaries was done the following anatomical conditions were noted: The cysts varied in size from a pea to an English walnut, and in number from one to a score or more. These cysts, as Martin has pointed out, are not confined to the periphery of the ovary as is the case with ripened follicles, but are distributed throughout the stroma and may almost replace the stroma.

On microscopic examination of these ovaries I have been astonished to note the scarcity of normal follicles with contained ova. In a few sections none were to be found, and in nearly all they were fewer in number than would appear to be normal. The explanation probably lies in the atresia brought about by the addition of new connective tissue to the stroma and its subsequent contraction. In a small percentage of cases fresh corpora lutea were found, showing the ovary capable of functioning. In all of them corpora albicantes were abundant.

Hyaline degeneration is a prominent feature in nearly all sections. The walls of blood vessels, corpora albicantes, stroma and tunica albuginea all possess more or less of a hyaline deposit. This has been marked in the ovaries of young individuals. Congestion of the blood vessels, while not constant, was a notable feature in almost all cases. Round cell infiltration of the stroma was frequently observed.

Gland-like structures, the remains of Gartner's ducts, were occasionally found in the hilus of the ovary. In the follicles, not exceeding a pea in size, the membrana granulosa and ova were usually found intact, but in larger cysts they were almost never found, and, when present, the ova were never in a healthy state. In the larger cysts I have carefully searched for lutean cells in the walls, but have repeatedly failed, and in many there were traces of membrana granulosa and theca. Cysts the size of a walnut were undoubtedly follicular, though a larger number were from corpora lutea.

The figures pictured by Walthard were occasionally observed. There were epithelial columns extending from the surface of the ovary into the stroma, and in the substance of the ovary were isolated nests of epithelium having no connection with the surface epithelium or follicles. In some instances these canals and nests of epithelium were seen to form cystic spaces which, as pointed

out by Walthard, resemble follicular cysts, but lack the contained ova, membrana granulosa and the surrounding tunic.

A review of the clinical history of these 180 cases, including the records of the pathological findings at the time of the operation, was made with a view of determining to what extent these morbid changes in the ovary contributed to the suffering of the patient, and for the purpose of determining, if possible, the clinical importance of the lesion.

Of the 180 cases, 39 were uncomplicated by pelvic lesions other than follicular degeneration of the ovaries. A careful clinical study of these uncomplicated cases should afford some definite conclusions. In the remaining 141 cases in which there were complicating pelvic lesions, it has been possible, to a certain extent, to note the rôle played by the cystic ovaries, but only was this attempted after a careful analysis of the uncomplicated cases.

In the 39 uncomplicated cases general pelvic pains were complained of in 16; pain in the region of the left ovary in 11; pain in the region of the right ovary in 10, and pain in the back in 19 cases. It was a rule, to which there were a number of exceptions, that the pain was referred to the affected ovary. When both ovaries were involved the pain was likely to be distributed throughout the pelvis, and when one or both ovaries were cystic and lay behind the uterus there was usually backache. In every case pelvic pain was complained of. Tenderness was almost always elicited by pressure upon the affected ovaries. In 18 of the 39 cases there was dysmenorrhea, and in the most of these cases the pain preceded the appearance of the menstrual flow and continued throughout the period.

In 34 cases the flow was normal or decreased in amount; in 5 cases there was menorrhagia; 6 of the cases were sterile; 6 were not married, and the remaining 27 had borne from one to nine children. In 3 cases it is recorded that the patient was hysterical, and in 11 cases general nervous disturbances were complained of. Headache was present in fifteen cases.

In reviewing the histories of the 141 complicated cases I have satisfied myself in many instances that the cystic ovaries contributed in the above manner to the discomfort of the individual.

A brief summary of the associated lesions will be of interest. In the 180 cases 14 per cent. were associated with uterine fibroids; 14 per cent. showed some morbid changes in the appendix; in 8 per cent. one or both kidneys were unduly movable; inflammatory lesions were noted in the Fallopian tubes in 15 per cent. of the

cases; 9 per cent. presented some sort of backward displacement of the uterus; in 7 per cent. there was partial prolapse of the uterus; gall-stones were found in 4 per cent.; intraligamentary tumors in 2 per cent., and varicosities of the ovarian and uterine veins in 7 per cent. of the cases.

Varicose ovarian veins in the broad ligaments are doubtless a more common factor in the causation of cystic degeneration of the ovaries than would be inferred from these statistics. Doubtless they were not always recorded when found, and the Trendelenburg position would empty the veins and make them less prominent. The passive congestion in the ovaries as the direct result of varicosities in the ovarian veins would lead in time to hydrops of the follicles and the hyperplasia of the stroma would hinder the rupture of the enlarged follicles.

The average age of the cases when operated was 32 years. The youngest was 19 years, and the oldest 48 years. The greatest number were operated between 30 and 40 years of age, but there was an almost equal number between 20 and 30 years. The usual infectious diseases of childhood were experienced in 65 per cent. of the 180 cases; and there was a history of puerperal, post-abortive or gonorrheal infection in 63 per cent. The average duration of the symptoms was seven years.

It would be of the greatest interest to inquire into the history of these cases subsequent to the operation. The difficulties involved in so doing are great where the patients are located in distant portions of the country. To communicate with them by letter would be unsatisfactory because many would not reply, and of the replies received many of them would afford little reliable information. I have, therefore, determined to report the after results of cases which have been under personal observation since leaving the hospital. Six of my own nine uncomplicated cases have been under observation for from three months to five years, and have been completely relieved of all symptoms referable to the cystic ovaries. Four of these had one or both ovaries resected; one was a removal of one ovary, and a resection of the other, and the sixth was a removal of a single ovary. Not only has there been no recurrence of symptoms, but so far as an examination will reveal there has been no subsequent enlargement of the resected ovaries. From the records I learn that four of Dr. Webster's cases have returned for the removal of a cystic ovary five months to one year and a half after the resection of the ovary. Out of the 67 cases in the laboratory records in which no tissue was re-

moved except part or all of the ovary, Dr. Webster states that he has followed 35 of these, 4 of which have been failures and 31 have recovered completely.

These observations have led me to the following conclusions:

1. Cystic degeneration of the ovaries is almost invariably the result of chronic ovaritis, which in turn is caused by infection or passive congestion of the ovary. It is, therefore, a morbid lesion.

2. One or more ripened follicles in the ovary are not to be mistaken for follicular degeneration.

3. Symptoms referable to cystic degeneration of the ovaries are pelvic pain and tenderness, dysmenorrhea, sterility and general nervous phenomena. Of these symptoms, pain is of constant occurrence, but is not constant in character or location. Too much stress is not to be laid upon the complaint of pain and tenderness, for undoubtedly the explanation frequently lies in the presence of associated lesions, or in an instability of the general nervous system.

4. Cystic degeneration of the ovaries doubtless contributes to a general nervous state, but in my judgment this can only be due to the local discomfort. I doubt if there can exist a general disturbance of the nervous system referable to the ovaries without local discomfort. Therefore, in the absence of local disorders, the general nervous phenomena should not call for surgical intervention or for any consideration of the ovaries.

Should we operate upon cystic ovaries? In answer to this question, I would say that the frequent occurrence of symptoms referable to the ovaries justifies the practice of resecting or cauterizing, and sometimes of removing the ovary, when the abdomen has been opened for the relief of other pelvic lesions. This should be the rule where its performance would not entail greater risk to the patient. Such a practice will frequently contribute to the complete relief of the patient.

The question of operating upon uncomplicated cases of cystic ovaries is more debatable. The lesion frequently has absolutely no clinical identity, and therefore should not be interfered with. On the other hand, in a definite proportion of cases there is sufficient local discomfort to justify both patient and surgeon in interfering.

Where pain, tenderness and dysmenorrhea are complained of, the surgeon must first satisfy himself that these complaints are not the result of associated lesions or the expression of a general nervous disorder.

I believe in the resection and even in the complete removal of uncomplicated cystic ovaries, but only where local discomfort, which is the direct result of the lesion, justifies the sacrifice of part or all of the ovaries. Such cases are not common.

100 STATE STREET.

SOME NOTES ON THE CARE OF PREMATURE INFANTS.¹

BY

V. P. BLAIR, M.D.,
St. Louis, Mo.

THE difference in the care of premature infants and those born at term is one of degree and not of kind. The same general principles underlie both. These differences, while only of degree, are, with earlier and more delicate infants, of the greatest importance. Apparently very slight inaccuracies or indiscretions often cause a fatal result.

The rule that the best mechanic needs the fewest tools, and the best doctors the fewest drugs, holds good here, and many a very young child has been raised successfully without other help than a warm room and a careful nurse, and due regard for the ordinary principles of infants' care. However, it is generally conceded that by special apparatus the temperature of the warm room can be made equable, and that the more perfect the apparatus the more remote may be made the possible contingencies. It will not save the hopelessly diseased or functionless infant, but may help to bridge over a period of poisoning, or incomplete functions that would prove fatal in a few hours were the child exposed to the ordinary vicissitudes of life. The incubator I prefer is described in the *Medical Fortnightly*, St. Louis, June, 1903. Everything I give you has been confirmed by personal observation, and the incubator is the result of this observation. All babies must have sufficiently warm, sufficiently moist, and sufficiently pure air. They require sufficient stimulation to carry on the requisite functions of life. Their exposure to infection must be relatively limited, and their food must be in an easy assimilable form. With the premature infant, the air must be of a higher temperature and the variations held within much closer limits. The moisture must be greater and more constant and the purity of the air in proportion.

¹Read before the St. Louis Medical Society, Jan. 9, 1904.

The child's resistance to infection is reduced, and the time at which stimulation changes to irritation, and nourishment to poison, is but illy defined. The younger the infant the closer are the limits of variation.

There are a certain number of premature infants which, either through intoxication or lack of functions, are unable to continue extrauterine life, in spite of any help that is at our command.

As all doubtful cases should be treated with regard to their worst possibilities, so all premature infants should be treated as if they were the most delicate, until they prove themselves otherwise. The difference between the relatively strong and the weak is so slight, the difficulty of its recognition so great, and the time of change from health to death so short, that this is absolutely necessary.

It is not always possible to have an ideally equipped incubator at the time of the appearance of the child, but it is always possible to have some sort of a make-shift that will, in many cases, suffice to carry the child until the proper machine is procured. The great point is that the child should not be necessarily surrounded by and come in contact with hot bottles, but that it should breathe warm air of about 100 degrees F. at the start. This is a very important distinction.

The infant may be placed in a basket and suspended sufficiently near a stove or over a radiator of the proper temperature, but this is not the best plan. It should be placed down in some compartment where the temperature can be controlled, and where there is sufficient space between the child and the roof of the compartment to allow a free circulation of warm air, thus fulfilling the requisite, which I mentioned before, that it should breathe the warm air.

An easily constructed and rather efficient improvised brooder consists of a box of some twenty inches deep, and of sufficient width and length to contain a pillow and have some room to spare. In this box is placed a sheet and blanket with the edges protruding from the box in all directions. Next is placed a pillow so as to slope at an angle. At each end of the box is placed a row of bottles of hot water. A thermometer, if available, is hung inside, and the whole covered with the blanket, with the exception of an inch space at the end of the box, corresponding to the higher level of the pillow and to the feet of the infant. The infant, wrapped in cotton, is placed on the inclining pillow, head downward, on its right side, and fastened by its wrappings so that it

may not slide down and bring pressure upon the vertex. An even temperature may be had by filling alternate bottles with hot water, as may be required, and moisture may be supplied by hanging a wet handkerchief over the bottles at one end. The external box of this apparatus may be replaced by a barrel, a bath tub, a deep basket, or the space between two broomsticks and two chairs, and I have found a bureau drawer with a hot-water bag an efficient substitute for the whole thing when emergency demanded.

The incubator is large, with the opening in the top and with two hand holes in one of the side plates, through which the lesser manipulations of feeding, changing, etc., can be conducted.

The heat is derived from a lamp and is distributed by secondary radiation from a copper radiator that contains twelve gallons of water, and has two thousand square inches of radiating surface. The air is filtered through gauze before entering the machine, and is moistened by being exposed to a body of warm water, with a surface area of from eighty to four hundred square inches, as desired. The circulation of the air is maintained by gravity, and will cease entirely when the temperature outside is equal to that inside the incubator when the door in the top is left wide open. The incubator is furnished with both a lamp and a Bunsen burner. The lamp will maintain the more equable temperature, and when properly cared for gives no odor. To facilitate this, duplicate burners are furnished with each lamp.

Three thermometers are furnished with each outfit, one fixed in the radiator, one to take the temperature of the food, baths, etc., and the third, hanging in the living chamber, is of a kind that registers the highest and the lowest temperature attained, so that the physician can know at each visit what variations have occurred.

The bed to which the mattress is attached is movable, and the chamber is sufficiently large to allow it to be placed at any desired inclination. All the parts are movable, and can be easily gotten at for repair or cleaning.

It is sterilized by disintegrating one ounce of formol over an alcohol lamp in the living chamber, closing all apertures, and placing the cover over the incubator for six hours, to be followed by the disintegration of four ounces of aqua ammonia in the same manner to destroy the paraformol.

Whenever possible, the machine should be set up and running before actually needed, as this gives the nurse familiarity with its

adjustment and places it in readiness when needed. This is greatly to be desired. In many cases, however, some emergency make-shift will have to be resorted to until the regular machine can be procured.

As soon as the child is resuscitated, it is, unwashed, smeared with warm oil, wrapped in absorbent cotton and pinned on its right side in the incubator, which should be at a temperature of 100 degrees F. If there is weakness or irregularity in breathing, the foot of the bed should be elevated to from 20 to 90 degrees. The child should then stop crying and assume a rather crimson hue and go to sleep. Restlessness and a rise of temperature of above 102 degrees should be the indication for gradually lowering the temperature of the incubator. Five or six hours after birth water to drink should be given.

In resuscitating the more delicate ones, I believe that suspension head downwards with alternate compression and expansion of the chest, and alternate douchings with hot and cold water has some advantages over the more violent methods of Schultze and Sylvester. After clear breathing has once been established, the child should be removed from the warm chamber for apnea and suspension, and if necessary, the injection of strychnine given at the rate of $\frac{1}{4000}$ of a grain to every pound of body weight, and baths should be relied upon.

The child that is in need of artificial heat, at first cries lustily and the color will gradually assume a bluish and then a greenish tinge. There is a gradually decreasing temperature, and the cries weaken until they finally cease. The cessation of the cry of such infants should always arouse the gravest apprehension, and we should not be satisfied until we are sure by other signs that the child is doing well. It is the most common experience to be told that the child was crying well, but is now quiet, and upon examination to find that it is either dead or dissolution is imminent.

Normal infants at term have a reserve that will maintain heat and vitality for some twenty-four to forty-eight hours, until the time for feeding comes, while early premature infants are equal to but a few hours, therefore the age at which urgent symptoms arise is in proportion to the age and strength of the child. While a six-months' infant in most cases would not survive after an exposure of two hours to a temperature of 80 degrees, an eight-months' infant might do well for two days and then not be able to appropriate nourishment sufficiently rapid to maintain its body temperature, after the reserve has been exhausted. It is to bridge

over this period that the incubator is called into play, and it will be necessary for months or days according to the condition present.

I would never place a child in an incubator without covering. The covering I prefer is a combination of a triangularly folded napkin lined with absorbent cotton. The child is laid with its head beyond the broad folded edge of the napkin, with the cotton next the skin. The two lateral corners are folded over it, including the arms. Now the lower corner is brought up over the feet and all fastened with one or two safety pins. This prevents the child from bringing cotton to its mouth, gives a firm support for suspension, and it is not necessary to remove the entire wrapping every time to make changes. Unfastening the lower corner is often sufficient. It should be snug at the neck, and otherwise loose enough to allow motion of the limbs.

In vertical, or nearly vertical, suspension, some means must be provided so that the child's weight does not rest entirely on its shoulders, thus compressing the chest.

The temperature of the incubator must be regulated according to the needs of the child, and after it is first placed in, at a temperature of 100 degrees, the probabilities are that this heat will soon have to be lowered. The indications are the color, comfort, and temperature of the child. The child's temperature may be safely maintained at a temperature of 100 degrees to 102 degrees, and it seems to stand 105 degrees for hours without damage, and as a rule I would never allow it to go below 99½ degrees. Exceptions must be made in cases of children in which the sweat glands are well developed. While the body heat of younger subjects is dependent upon, and may be entirely controlled by, external temperature, when the functions of sweating is established, persistent attempts to raise the infant's temperature will often cause profuse perspiration, sudamina, eczema, heat depression, diarrhea, etc. If, especially within the first hours after birth, the child is of a dark dusky red or reddish purple but not bluish yellow or green, is not breathing well and upon inclining its head downwards, the head and face become congested with venous blood and at the same time the body temperature is 99 degrees or over, it is proper to cautiously lower the incubator a few degrees and give warm baths in hopes of stimulating the lagging heart. Strychnine in smaller doses, 1/1000 of a grain, may be given hypodermatically and cautiously repeated. It is, however, a very unpromising condition.

When the child is maintained at the proper temperature, other things being equal, it assumes a crimson color and sleeps quietly. When the temperature in the incubator is too high and the child's temperature reaches 104 and 105 degrees, it becomes restless, but does not as a rule cry. When the temperature of the incubator is too low the child's temperature falls to normal or below, it draws up its knees, cries and assumes a pale or a bluish green color. 93 to 97 degrees in the sixth and seventh months, 88 to 95 in the eighth, and 80 to 90 degrees in the ninth month are average temperatures for the incubator. In all cases, from hour to hour and day to day, the incubator must be regulated according to the demands of the child. Besides the actual temperature of the child's body, the temperature of the extremities must be watched. Cold hands or cold feet are due to one of the three following causes, which should always be corrected at once, as they bring about internal congestion, which is followed by mucus in the respiratory or intestinal tract. The condition is due generally to a low incubator temperature, colic, or poor circulation.

Before a child is removed from an incubator the temperature has gradually been reduced to about that of the room in which it is to live, and it has been removed for a longer and longer time at the feeding periods.

The importance of feeding needs no comment. Where possible, breast milk should be used, preferably from a woman with a child one to three months old. It should be given diluted, starting with a percentage of $\frac{1}{2}$ per cent. proteid, 1 per cent. fat, and 6 per cent. sugar, and increasing as demands and digestion warrant. Where artificial food is necessary the following plan is good as a start. A solution of 1 per cent. soluble proteid and 2 per cent. fat, and 6 per cent. sugar is peptonized for forty minutes, is given in dilutions of one, two or three parts of 6 per cent. sugar solutions or pure, as required. If necessary, the casein that was in the cream may be curded with rennet before peptonizing.

Rotch's caution to keep strength and quantity slightly below the child's capacity should be observed, but always remember certain gastro-intestinal disturbances are best treated by increasing the strength of the food.

We often have to deal with an apparent vicious circle, inasmuch as digestion and nutrition are impeded by the high temperature (as in the case of summer heat); but the child is not as yet able to assimilate sufficient to maintain its bodily heat at a low atmospheric temperature, yet it cannot bear a low atmospheric

temperature till it can do so. However, the circle is not absolutely complete, so that by care in feeding, and by gradually and cautiously reducing the incubator temperature, and by regular bathing, one, two or three times a day, we will reach the point where the child can maintain itself at a normal house temperature.

Where the child is not sufficiently nourished by this mixture, or by breast milk that it is able to take care of, have found it advantageous to add a small quantity of beef peptone, most conveniently in the form of panopeptone, in from one to five drops to the feeding. I have had to rely on panopeptone entirely for two days at a time in severe gastro-intestinal disturbances. This was with an artificially fed child. The quantities of food range from $\frac{1}{2}$ drachm to two ounces as growth progresses, and the interval from one hour to an hour and three-quarters in the day time, and from two to three hours at night.

As a rule, feeding should be begun with at least sugar solution, within six hours after birth. Young infants cannot nurse. I have never used gavage, and would consider it a grave expedient. Fluids dropped far back into the child's mouth from a medicine dropper have always been swallowed; the food should be given very slowly and time to rest be allowed between every several swallows. Later, a rubber nipple or the breast is to be substituted but when used too early these do not satisfy, and produce hic-coughing and intestinal disturbances. Water should always be offered the child if awake between feedings.

Asepsis should be as nearly absolute as possible, should cover every point from the thermometer that tests the food to the nurse's hands and the bath water. Everything should be treated as for a surgical operation.

Stimulation. Strychnine and whiskey will be considered under medication. Food and bathing are the means that should be ordinarily employed. Food of the proper kind given at the proper intervals, together with the inspiration of air twenty-five degrees below body temperature, and the reaction of the voluntary muscle action, are normally sufficient stimulation to excite all of the functions, but in the incubator the temperature is held high, which is enervating, and voluntary movements are slight so that the food by itself does not always suffice.

My sheet-anchor is bathing, and I resort to it just as soon as I find there is exhibited a lack of coördination in the function, and do it as a routine practice after the first or second week of mundane life. If carelessly done, it could be immediately fatal, but

the following method is, I believe, absolutely without danger: Before the feeding time, a small basin of water, of the temperature of 100 to 103 degrees F., is placed in the incubator alongside the child, the nurse having provided herself within easy reach, with fresh wrappings and a soft towel wrapped around separate hot bottles. Through the upper opening the napkin, but not the cotton, is removed and the child immersed in the bath. The nurse, holding the head and shoulders with one hand and splashing the cotton covering with the other, using some friction with the cotton up the spine and extremities of the child. The bath should last from one to three minutes. When it is to be removed, the child is lifted out of the cotton and placed in the warm towel which lies next to the tub and is quickly dried. This towel should be thick. The child is greased and replaced in warm wrappings, and the process, which is to be immediately followed by the feeding is complete. One to three baths may be given a day and so timed as to strike the periods of greatest depression.

Bathing is corrective of poor circulation, a disinclination to take food at the proper time, inability to go sufficiently long between feedings, cold extremities, and the condition known as "cold," whether intestinal or bronchial, and by it we may break the vicious circle of insufficient innervation.

Ordinary baths should be at 103 degrees for two minutes, for the condition of "cold" they should be at 100 degrees for one minute. For poor reaction the temperature may have to be raised; for severe colic to 105 to 107 degrees. A child that is regularly bathed more quickly accommodates to a decreasing incubator temperature. Massage is limited to the abdomen when necessary to assist in expelling gas or mucus.

Even in these patients proper medication is of advantage. For acute and severe depressions, strychnine sulphate, $\frac{1}{4000}$ of a grain hypodermatically to every pound of body weight should be given, or a few drops of whiskey may seem less heroic. In states of listless depression that occur without apparent cause, I do not hesitate to use strychnine, and leave such orders with the nurse.

It must be remembered that in these infants the slightest irregularities may become rapidly fatal. Whiskey with milk of asafetida will relieve lesser colics, while graver ones demand vigorous abdominal massage with hot oil and may be paregoric, dropped from the rim of an ounce bottle in doses of $\frac{1}{4}$ to $\frac{1}{2}$ drop, to every pound of body weight. Paregoric should always be followed by castor-oil. These children stand castor-oil well

and should be given from ten drops up as often as every three days in subacute intestinal disorders.

When a child in an incubator cries, an investigation should be made, first to see if it is dry, next if its hands and feet are warm, and if between cries its abdomen is soft. The time of its next feeding should be considered, and a clean finger placed in the child's mouth will often differentiate between hunger and colic. If hungry, water should be given the child to carry it, if possible, to the next feeding. Crying before several consecutive feedings, means either that the interval is too long, the quantity too small, or that the child is not assimilating the food.

Mucus in the intestines does not necessarily mean the food should be withheld or cut down. These children have little reserve and will not stand it. Possibly the food should be increased to give strength, and certainly a more stimulating food, such as raw breast milk, or an increase of beef peptones should be tried. Bear in mind that the meconium persists for days, and that mucus may be many hours old.

Cold extremities with low body temperature demand more atmospheric heat, but occurring with proper body temperature, ($101\frac{1}{2}^{\circ}$ or over) stimulation with investigation for intestinal irritation are indicated. Sneezing and coughing usually demand a raise of incubator temperature, but with proper stimulation. For sweating, incubator temperature should be lowered.

Bathing, backed by proper temperature and food, is the best means to reestablish the coördinate functions.

As far as I have had a chance to observe, incubator babies make healthy children. The regular habits established may be utilized in later life, and they do credit to the process.

In order to be successful, the first requisite is that the child be placed in the incubator alive, for which possibility we are in most cases dependent upon the nurse rather than the doctors, therefore if we wish to save these babies, we must start by instructing our nurses in the exact technique of first aid. I say exact technique advisably, for this is a most critical period, and one cannot be too careful.

In the past month, in five of the cases I have been asked to care for, in which no provision was made before the birth of the child, four of them died before an incubator could be brought into operation, in spite of the fact that, in two cases at least, every possible precaution was taken.

This was not far out of line with the bulk of my observation,

and is my excuse for the length of time I have dealt on this part of the subject.

Before closing, I want to make a plea for an incubator, or an improvised hot-box in other conditions besides prematurity. The treatment of marasmus and of gastro-intestinal disturbances of infancy is much simplified in many cases, if we are able to lessen the work of digestion, by the amount of food required to maintain the body heat, and I believe no one who has ever treated bronchitis or a bronch-pneumonia in the even, warm, moist atmosphere of an incubator will ever be willing to exchange it for the poultice or the hot-water bag.

305 NORTH GRAND AVE.

A REPORT OF NINE HUNDRED AND SEVENTY-FIVE CONSECUTIVE, RECORDED CASES OF CHILDBIRTH, IN PRIVATE PRACTICE, WITHOUT A MATERNAL MORTALITY.¹

BY

J. S. HAMMOND,
Butte, Montana.

EXPERTNESS in Midwifery comes only by experience. That judgment, that conservatism, that is requisite to manage lying-in conditions and their complications with the maximum safety to mother and child are acquired only after such conditions and such complications fail to puzzle the practitioner by their novelty, or to terrify him by reason of being unexpected or unforeseen. There is often a stage fright on the part of a novice in the presence of an accouchement somewhat similar to that of inexperience on the platform. And this trepidation is responsible for many sins of omission and commission. Only by extended observation can one decide between the normal and the abnormal in parturition. For normal and abnormal are somewhat relative terms, and those conditions which may be physiological in one case may be pathological in some other.

The prime essential in the obstetrician is good judgment. After the routine instruction of the class-room and of text-books, he must learn to recognize every case in practice as a law unto itself. No two cases present precisely analogous conditions. In

¹Read before the Silver Bow County Medical Society, Butte, Montana, April 27, 1904.

some cases interference means death as surely as it saves life in others. Respecting courses of procedure in the management of labor nearly everything is relative. Whether the bag of waters should be ruptured or left to nature; whether chloroform should be given or withheld; whether the patient should be postured or not; whether the os needs assistance in dilatation or not; whether the forceps are necessary or desirable or not; whether the perineum can be left alone or needs support; whether the patient's strength is sufficient to carry her safely through or not; whether uterine contractions are sufficiently vigorous; whether or not the externals are as favorable as they can be made. Is the room comfortable? Are there troublesome visitors present? Is there present a fussy, officious husband or mother who is making the situation so uncomfortable as to demand his or her banishment from the lying-in room? Text-books can deal only with generalities. Judgment and tact make the successful accoucheur.

In this connection a word or two respecting the advisability of assistance in labor. Obstetric teachers are accustomed to inveigh against meddling midwifery. Experience would seem to justify such counsel. The more extended one's observation in this branch of medical practice, taking his own experience and that of others, the more he becomes convinced that too many cases are indiscreetly interfered with. If an appeal were taken to the experience of every obstetrician, it is fair to presume that every one without exception would confess he had managed cases which would have done far better if they had been left to nature. Every neighborhood has one or more of its old women who make a practice of going around and serving women in childbirth. And they perform these services with the utmost confidence, boasting that they "know more than all the doctors." They attempt to manage all sorts of cases, absolutely ignorant of anatomy, of therapeutics, or asepsis. So utterly lacking in scientific knowledge, in fact, that after severing the umbilical cord they will sit patiently holding its divided end tightly until nature expels the placenta, lest it should slip back into the body! And yet these old grannies rarely experience any fatalities in their work. Perhaps it would not be untrue to assert that almost any old ignorant midwife, who could boast of an experience of a hundred cases or more, could also claim a mortality percentage as low as that of the average practitioner. There must be a reason for this. Surely anatomical knowledge, therapeutic skill, and the clinical teaching of the schools should not pass for

naught. The most plausible explanation would seem to be that the old woman *doesn't know enough to interfere*. She restricts her ministrations to feeding the patient hot teas of various kinds, and to exhorting her "not to put her hands above her head and to bear down." These facts should contain an admonition for the doctor. If he is in a hurry, or is himself getting nervous over the slow progress of a case, or is annoyed by the repeated importunities of the patient or her friends or relatives to "do something," he applies the forceps and terminates the labor. There is some traumatism of the mother or the child, and if his asepsis has been faulty, septicemia follows with a serious morbidity, perhaps fatality. The old woman couldn't do this. She didn't know enough. She waited for nature, and although there was an hour or two more of anguish in labor, the sequel was a happy mother and a healthy child.

The old woman in her work must certainly meet abnormal presentations of all kinds, but, if given sufficient time, nature will rectify nine-tenths of these, and often, *very* often, with less danger to the mother than from the average professional assistance. The expression of these views must not justify the conclusion that the writer would relegate obstetric practice to ignorant midwives, but rather to intelligent, conservative, professional supervision. Perhaps in no other branch of our art is a little learning so dangerous a thing. "Meddlesome Midwifery!" What does it mean? What is it to "meddle?" *To interfere where one has no business*. How aptly applied to the mismanagement of cases that can safely be left to nature! Not "interference" merely, for that is necessary in some emergencies, and very imperatively and promptly necessary; but indiscreet interference is the error to be avoided. Right here is where the doctor has the advantage of the old woman. He knows how to interfere when discretion demands it. But happy is he if it can be said of his practice that he never lost a case by interference which would have terminated favorably in the hands of the old woman and nature!

Many physicians seem to regard their education in the matter of forceps application and management as a perfect justification of their frequent use. Because they know how they must frequently resort to this method of expediting delivery. A recent writer in one of our periodicals,—and I dare presume he is a practitioner of limited experience, for when he becomes older he may be wiser,—says, scornfully, respecting the management of tedious deliveries,—“We are nothing more than men midwives if

we leave these cases to the tardy operation of nature." Respecting this remark the writer desires to say that unfortunate is the husband who employs us, be we men midwives or Professors of Obstetrics, if a single act of interference on our part adds one iota of danger to the ordeal through which his loved one is passing and which he has committed to our care confident of competent management.

The writer appeals to the experience of any obstetrician who is accustomed to use forceps. Suppose your parturient case in hand has been in labor for several hours. The labor is in the second stage and the pains are frequently and powerfully recurring. The cephalic diameters are such as to necessitate a marked degree of moulding. It is making a little progress all the time, but,—oh, *so* slowly,—yet, withal, the patient's vital force is comparatively unimpaired. The vaginal secretion is abundant and *bloodless*. Your patience is finally taxed to the limit and you feel you *must* help her. Acting on this impulse you prepare and apply your forceps. Usually following the first or second vigorous traction, no matter how carefully made, there appears a marked show of blood. Is the picture a familiar one? Do you recognize it? What does this show of blood mean? It means that you have ruptured the continuity of the maternal mucous membrane *somewhere* in the parturient canal, and have been guilty of opening the first door for subsequent septic absorption. You have forced a dilatation by laceration when nature would have accomplished the same bloodlessly in time. You may say she would have been lacerated anyhow. Well, if so, you must grant that she has been lacerated to a much greater degree by your application of force. Little danger of septic absorption from an unbroken mucous membrane. Its own secretions have been demonstrated to be germicidal. Interference is malpractice, *whoever may be guilty of it*, if it adds danger rather than averts it! Respecting asepsis it would seem that the multifarious procedures advocated by so many writers and teachers greatly overdo the matter. The writer has always carried a box of bichloride of mercury tablets in his satchel but not for months and months has he used one. Good hot water with ordinary strong laundry soap, plenty of it, on hands with clean finger nails will make a reasonably competent sterilization. As for complete, absolute sterilization of the hands it has been shown to be impracticable. In the ordinary vaginal examinations necessary to determine the presentation, the extent of dilatation, and the rate of the prog-

ress of the labor, it is difficult to understand how a thoroughly washed hand can carry any infection that will be absorbed through an unbroken vaginal mucous membrane. The comparative immunity from infection in patients attended solely by old nurses who probably never wash their hands previously to making examinations and otherwise handling women, can be explained on the theory that dirt is not always septic. It is my custom in the use of forceps to let the blades stand a few minutes in boiling water before using. And in repairing the perineum the materials and instruments necessary are immersed in boiling water. Whenever it is necessary to pass the hand and arm into the womb for podalic version, for removing an adherent placenta, or for verifying a diagnosis of position, the only lubricant and germicide is a lather of hot soap suds.

There is one thing that is not done,—and most emphatically *not* done,—and that is to allow any officious nurse or attendant to give a post-partum vaginal douche. By this ill-advised and most reprehensible “meddlesomeness” particles of lochia which have descended into the vagina and have become decomposed there by contact with air, are carried by the douche current into the patulous womb, find lodgment there, and very soon there develops a beautiful case of infection. If a rise of temperature or a condition of nervousness occur postpartum, which cannot be explained by the accession of milk to the breasts, and which probably points to the retention in the womb of some overlooked portion of the membranes, or to a decomposed blood clot, the patient is exposed in a good light and on a Kelly pad and the womb is thoroughly douched with a hot bichloride solution 1 to 4,000. Many of my cases were managed under an environment of the most abject filth and poverty. Often no change of clean clothing for the patient or a clean sheet for the bed, the patient lying on an old blanket or comfort black and almost stiff from long continued service. And yet these cases would fail to develop the least morbidity. Facts often confound theories.

Following is submitted a record of nine hundred and seventy-five consecutive labor cases without the death of a mother. These all occurred in Butte, Silver Bow County, Montana, and its immediate vicinity. An examination of the recorded character of these labors will clearly show that this experience has not been free from dangerous complications and particularly trying cases. And yet, perhaps, this record has been based more on good fortune than on skill. For during this time the writer has seen cases in

consultation which had they occurred in his practice would just as certainly have proved fatal. These cases he observed with interest and profit and also with emotions about equally divided between commiseration for the doctor who had them and self-congratulation that they did not happen to him.

Nationality.—Butte being the largest mining community in the world, its laboring population is composed mostly of miners, and of these a majority is foreign born. This will explain somewhat the nationality of the parents. Both parents foreign, 527; one foreign and one native, 244; both native, 204; total, 975.

Duration of Labor.—The parturient process depends so entirely upon conditions for its duration that it is difficult to assign any set time for its completion. The integrity of the amniotic sac, the presentation, position, and size of the child, the condition of the os as to rigidity or non-rigidity, the diameters of the maternal pelvis, primiparity or multiparity, the degree of perineal resistance, the mental and moral condition of the mother (violent emotions, lack of confidence in her attendant, terror, or hysterical excitement often suspending labor completely for the time being), retarding precipitate, violent, expulsive pains by profound anesthesia for fear of lacerations, or the necessity of temporary abolition of ineffectual pains by opium narcosis,—any one of these conditions, or a combination of them may cause a difference of hours, sometimes of days, in the time elapsing between the onset of labor and the first welcome cry of the new-born child. By careful observation of a large number of cases, however, an average time can be struck, less than which may characterize a labor as quick or even precipitate, and more than which would justify us in calling it tedious. Hirst names the average time of all women, taking primiparous and multiparous subjects together, as between twelve and fifteen hours. The duration of labor in these 975 cases was accurately noted and the average time was almost exactly twelve and a half hours. This average corresponds exactly with a computation made by the writer before on a large number of cases. Probably these figures would not be materially modified however extended the experience.

Hour of Labor.—There is no hour of the day or night, of course, that may not see the termination of a labor. Most people in their thoughts associate the night time with obstetric practice. Following is an accurate tabulation of the hour of birth of these 975 cases:

A.M.					P.M.						
Between	12	and	1	o'clock	36	Between	12	and	1	o'clock	38
"	1	"	2	"	44	"	1	"	2	"	28
"	2	"	3	"	47	"	2	"	3	"	41
"	3	"	4	"	44	"	3	"	4	"	33
"	4	"	5	"	59	"	4	"	5	"	36
"	5	"	6	"	47	"	5	"	6	"	36
"	6	"	7	"	44	"	6	"	7	"	38
"	7	"	8	"	48	"	7	"	8	"	35
"	8	"	9	"	37	"	8	"	9	"	33
"	9	"	10	"	40	"	9	"	10	"	38
"	10	"	11	"	35	"	10	"	11	"	41
"	11	"	12	"	49	"	11	"	12	"	48
Total A.M. Births					530	Total P.M. Births					445

It will be seen that the number of A.M. births do not greatly differ from the P.M. births, rather more in the morning hours. Between 4 and 5 A.M. witnessed the largest number, while between 1 and 2 P.M. occurred the smallest number. The average duration of labor, however, being twelve and a half hours, it is almost sure to involve the night either in beginning or ending.

Sex.—These 975 labors produced 986 children, there being 11 twin births. Of these, 500 were females and 486 were males. Hirst gives the natural proportion as 106 males to 100 females. These figures differ slightly, giving less than 103 males to 100 females. A former computation made by the writer on over 900 observed cases made the proportion of male births to female nearly 109 to 100. It would seem that a reliable estimate of the natural proportion of the sexes at birth would necessitate statistics from thousands of cases. This disproportion between the sexes is equalized at puberty, for infant mortality bears more heavily on males.

Month of Birth.—It is interesting to note the proportion of births to each month of the year as furnishing an indication of the seasons of greatest mutual sexual attraction. Appended is an analysis of these cases:

January	90	births
February	81	"
March	84	"
April	77	"
May	73	"
June	70	"
July	75	"
August	71	"
September	89	"
October	97	"
November	83	"
December	96	"
		<hr/>
		986 births

It will be seen that October has the greatest number, December and January ranging next respectively. Allowing for the usual term of pregnancy this would indicate that first, January, then March and April are periods of greatest sexual activity. This comes not far from corresponding to the alleged mating of the birds on Valentine's Day, and the rising movement of the succulent juices of the arboreal kingdom in spring.

Primiparity and Multiparity.—Of the 975 cases 261, or more than one-third, were primiparous women. This probably arises from the fact that this class of women is more apt to engage the services of a physician. Afterwards, from motives of economy, and when experience has demonstrated their ability to bear children safely, they trust themselves frequently to a nurse and nature. Of these parturients 227, or about one-fourth of the entire number had suffered one or more miscarriages.

Presentation and Position.—As to presentation these cases are classified as follows:

Vertex	938.....	or 95 per cent. +
Breech	30.....	" 3 " " +
Irregular	18.....	" 2 " " —

These tables correspond very nearly to those given by Auvard. Of the 938 vertex presentations there were

O. L. A.	721
O. R. A.	143
O. L. P.	27
O. R. P.	47
	<hr/>
	938

Of the 30 breech presentations, there were

S. L. A.	17
S. R. A.	4
S. L. P.	2
S. R. P.	7
	<hr/>
	30

Of the 18 irregular presentations there were

Footling	9
Brow	2
Face	4
Arm	3
	<hr/>
	18

Of all complications and anomalies in obstetric practice none will occasion the practitioner, particularly if he be inexperienced, so much anxiety and loss of sleep, so much trouble and perplexity,

so many conditions of puerperal morbidity, and in the end so much loss of confidence on the part of his patrons, and so much dissatisfaction with the results of his work, as occiput posterior positions of the vertex. The labors will begin and continue for hours with teasing ineffectual pains. Slight dilatation and just progress enough to keep the attendant anxious and watching hour after hour for some decided advancement. Naturally the inexperienced patient (for a very large majority of these cases happen in primiparous women), grows very nervous, concludes her doctor fails to understand her case, thinks he doesn't know how to manage the labor, becomes hysterical and exhausted. The friends and relatives begin to share this lack of confidence in the doctor as hour after hour passes without any satisfactory progress. The doctor feels the situation keenly enough to make him wonder why, if he would become a physician, he did not take up the eye and ear as a specialty. When a labor presents initial symptoms like these, if the attendant is sure of a vertex presentation, he can almost always be equally sure of an occiput posterior, either right or left to deal with. Experts will say a doctor ought to be sure of what he has by auscultation and palpation. The experience of the writer is that these cases will very frequently deceive the most expert diagnostician. He has often passed his hand around the head of the tardily coming child in utero and made sure he had an occiput anterior, applied the forceps after waiting a long time for satisfactory advance, and then had the head emerge from the vulva persistently posterior! Perhaps this confession does his skill little credit, but it is made as a slight contribution to that childbed experience which he apprehends happens more frequently than it is published.

What can be done with these cases? Complete dilatation must be waited patiently for, and meanwhile cause the patient to frequently assume the genupectoral position, holding herself thus as long as she can possibly bear it. It will often rectify the position by the action of gravity on the child in utero. As soon as the os is dilated or easily dilatable, whether the head is engaged or not, under profound anesthesia, the hand should be passed into the womb and the position accurately ascertained. Great care should be taken to avoid rupturing the membranes until the position is made out. For when the hand is in the womb the decision should be made between endeavoring to rectify the position trusting subsequently to nature or the forceps, and the alternative of podalic version. This latter procedure, of course, is contra-in-

licated after the waters have escaped and the womb has firmly contracted on the child, and also after the head has passed the mouth of the womb. Podalic version is a favorite procedure with the writer. It places the risks of delivery where they should be placed, all against the child and in favor of the mother. Forceps delivery is safer for the child, while if the membranes are intact, or very recently ruptured, podalic version can be done with scarcely any risk of uterine rupture, or injury to the mother. Laceration to a certain degree there is almost certain to be, in any event, and by either procedure, but not nearly so great by version as by the forceps with the occiput persistently posterior. Face presentations with the chin anterior usually do well. All four of this series were of that kind and born alive and in viable condition. Unless there is great disproportion between the passage and the passenger in size the tedious descent of the head finally allows the chin to be delivered under the pubic arch and all is soon over. But when the chin is posterior the position must almost always be rectified or the child sacrificed. Auvard says in this position "labor is impossible." However, that which is impossible in Paris is sometimes accomplished in the Rocky Mountain region of America, for since this paper has been in preparation the writer has delivered a nine pound child by forceps, in a primipara, with the chin persistently posterior, and the child lived four days! The mother was lacerated but healed by first intention. No morbidity marked her convalescence excepting her urine had to be drawn for five days.

One other case of face presentation, chin posterior, was seen in consultation where it was necessary to deliver by cephalotripsy.

Arm and shoulder, thoracic, and transverse presentations are usually successfully managed by podalic version.

In breech presentations the skill usually lies in refraining from interference. Give the body and soft parts all the opportunity possible to dilate the passage for the aftercoming head.

Chloroform was administered 481 times, or in just about fifty per cent. of the entire number of cases. It was never refused to any parturient. Would always prefer to administer it. Often it was most positively declined. My observation would warrant the positive assertion that post partum hemorrhage following its administration is a post hoc and not a propter hoc. It was usually given at the termination of labor to the extent of rendering the patient unconscious of the birth of the child.

Forceps were used in 118 cases, or about 12 per cent.

Lacerations occurred in 234 cases, or about 25 per cent. Everything in the nature of a rupture of the mucous lining of the birth canal was reckoned a laceration. The writer observes with a great deal of amusement statements made by some obstetricians, quoting an experience of sometimes as many as 2,000 cases of labor and gravely informing the reader "they have never seen more than one or two lacerations." Do such writers deliberately misstate or are they simply incompetent observers? Every solution of continuity of mucous membrane by the violence of parturition is a laceration.

Podalic version was performed 23 times, always by combined internal and external manipulation. This is a most important operation of election, and performed under proper indications and in properly selected cases will usually afford a speedy and very happy termination to many tedious and decidedly threatening conditions.

Of the 986 children, 32 were still-born. Naturally many cases of asphyxiation at birth occurred. For this the most effectual expedient has been mouth to mouth insufflation of the lungs with air.

There were four illegitimate births all occurring with inexperienced young women.

Well marked post partum hour-glass contraction of the uterus occurred 4 times. This complication imprisoned part of the placenta in every case, necessitating the introduction of the hand into the womb to overcome the contraction and liberate the after-birth.

There were 13 well-marked cases of adherent placenta. The plan of procedure in these cases was to gently insinuate the whole hand into the womb to its fundus, trace the location of the placenta and the adhesion guided by the cord, carefully and thoroughly peel the placental tissue from the wall of the womb with the finger tips, and then to withdraw the hand with the fingers curved scoop like, bringing everything, placenta, membranes, and blood clots, before it. This manipulation alone is usually amply sufficient to secure good uterine contractions.

A condition occurred twice which could very properly be called antepartum hour-glass contraction, in which labor was very tedious and for a long time impossible. This consisted of a tonic contraction of the Ring of Bandl, effectually imprisoning the child and preventing any advance in labor. It was overcome by manual dilatation and manipulation under profound anesthesia.

There were six cases of placenta previa. Three of these delivered themselves, one just before my arrival. These children were still-born. In three of the cases labor was induced as soon as a diagnosis was made. These three children were born alive but premature and non-viable. Two of these cases occurred in the same patient, separated by an interval of only 18 months. The only justifiable treatment of this condition is to empty the uterus as soon as the location of the placenta is ascertained.

There were 5 cases of prolapsed funis. In two of these the cord was replaced with the fingers above the presenting part, retained until after delivery, with perfect safety to the child. In one case the cord would not remain repositèd, the child was delivered hastily with the forceps and lived sixteen days. One case was a footling. Delivery was accomplished as soon as possible by traction on the feet, but the child was still-born. One was an occiput posterior position, delivered by podalic version,—child still-born.

Occasionally a short cord or one shortened by turns about the neck of the child will embarrass and retard delivery. Three cases occurred in which three turns of the cord about the neck made delivery very tedious. This condition can be presumed when there is no other discoverable cause for the dystocia, and there is a strong retraction of the presenting part between the pains. One case was followed by phlegmasis alba dolens. Good recovery after some weeks.

One case was intercurrent with a double pneumonia. In spite of this complication she recovered.

One case of puerperal insanity developed a few days after delivery. It improved gradually, and was doing well when she moved from under observation. A large perineal hematoma developed in one case twelve hours after delivery. In a few days the sac was freely laid open, the clot turned out, the cavity packed and it healed readily and nicely.

There was complete birth of the child in 5 cases before rupture of the amniotic sac.

The child was born with a firm knot in the cord in 2 cases.

In one case the water broke four weeks before delivery. During the interim water was dribbling from the patient all the time. Craniotomy performed one time.

Two cases of hydrocephalic heads. One of these required the craniotomy before it could be delivered.

One case of mammary abscess developed with the accession of

milk to the breast. The Murphy binder is almost a specific when this threatens.

Had to draw the urine for varying periods after delivery in 5 cases. In one case of delivery by podalic version the fibula was fractured near the ankle joint. It healed in a very short time under a proper bandage. One case of moderately severe variola attacked a patient in the seventh month of pregnancy. It ran its full course without inducing premature labor, and she was delivered at full term.

The longest interval between labors in the same woman was 14 years. The shortest interval was 10 months and 21 days.

One woman was delivered of her 17th child.

The heaviest child at birth was 15 pounds.

The most advanced age at delivery was 44 years. The youngest primipara was 14 years and 10 months (illegitimate birth).

One pregnancy was accompanied with the most intense general pruritus. It did not seem amenable to any remedy, and for a time seemed to threaten the necessity of induction of premature labor to render existence bearable. Two other cases were accompanied with the most persistent morning sickness on the part of the husband. Neither of these forlorn spouses escaped the exuberant and triumphant chaffing of their helpmeets, both of whom were high-spirited, strong, and hearty during the entire term. Many eminent obstetricians deny the possibility of birth marks from maternal impressions on account of an absence of continuity between maternal and fetal tissues. Can this husband-breeding be explained on psychological grounds?

Ophthalmia neonatorum occurred in three infants. Specific treatment for this complication is nitrate of silver solution, a weak borax solution, and frequent, most persistent cleaning of the affected eyes. Nitrate of silver grs. xx ad oz. j of distilled water brushed upon the carefully everted lids every day or every other day followed by hourly washing away of all purulent secretions, will very speedily effect a cure of the most desperate looking case.

Deformities of child at birth consisted of 2 cases of hare-lip, one case of cleft-palate unassociated with hare-lip, one case of club-foot, and one case of patulous foramen ovale which lived only twelve hours. One child was born without any left hand or forearm, just an abbreviated stump below the elbow articulation. It has since always been a remarkable healthy and precocious child.

One case of myxoma of the neck, exactly similar to Fig. 297, page 767 of Hirst's American System of Obstetrics. It was the

child delivered from the woman who had variola intercurrent with pregnancy. Had this complication of pregnancy any connection with the deformity? It was born alive and lived three days.

One case of puerperal eclampsia occurred with the fortunate result of saving both mother and child. The writer trusts he may be pardoned for introducing a history of this case as it best illustrates his method of treatment. Patient, native, white, 26 years. A lady of medium height, weighing about 140 pounds. Rather rosy complexion, married young, and gives history of alleged pulmonary tuberculosis at puberty which her mother says was cured (?) by marriage. From her appearance there was much doubt of her having ever been tuberculous. Has been married nearly 8 years. Has one boy seven years old. No miscarriages. Has never conceived before since the birth of her last child. This recent pregnancy, as was ascertained afterwards, was characterized by frontal headaches, with swellings of the hands and feet. Saw the patient for the first time when called to attend this labor. She had not consulted me respecting her condition previous to labor from a natural aversion she felt to going to see a doctor. During the last two weeks she has had several spells of a confusion of ideas, with temporary loss of sight. Labor began about 1 A.M., Jan. 30th, 1901. I was called at 5 A.M. Found her suffering with pain that was almost continuous and very sharp. The os was high up and not dilated in the least. Not complaining of any headache. She continued in the same condition with scarcely any change except two intervals of about two hours each during which time she slept. At 6 P.M. no particular change in her condition. No dilatation of the os whatever. There was a slight discharge with some little show of blood. Left her until 10 P.M. When I returned at that hour she said she had a dreadful headache, which she referred to the frontal region. This information at once excited suspicion, and I asked her if she had been subject to headaches, and then, for the first time I gathered the history of frequent severe headaches, with puffing of the hands, feet, and eye-lids. At once I saw impending danger of eclampsia, and went into another room intending to prepare a full hypodermic dose of morphia, with which I designed to relieve her headache and ineffectual labor pains, soften the rigidity of the os, and to anticipate, as well, any eclamptic developments. Just then the mother came rushing in with that frantic cry so paralyzing to a medical attendant,—“Oh, doctor. come quickly—she’s got a fit!” Found her distorted with a frightful convulsion. Counseling her

mother and sister to keep her from injuring herself, I seized my satchel which is always provided with a bottle of Norwood's tincture of *veratrum viride*, charged my hypodermic with it and gave it in the arm. The convulsions soon ceased, the pulse dropped to 55, and she began to vomit profusely and persistently. In 40 minutes fearing a return of the convulsions I repeated the dose. Shortly after gave under the skin one-half grain Morph. Sulph., and in an hour after another one-quarter grain. This comprised all the medicine that was exhibited. Her pulse would vary from 50 to 100. Persistent vomiting, which I made no effort whatever to control on account of its relaxing and eliminating action. No convulsion occurred again but she would have spells occasionally of fixing the teeth and the eyes, with some muscular rigidity, which would last perhaps five minutes. She had conscious intervals when she would recognize persons about the bed. At 2 A.M., about three hours after the occurrence of the convulsion, and a little more than 24 hours after the first onset of labor, uterine contractions came on, the os began to soften and to dilate rapidly, and in a half hour, she was delivered spontaneously of a male child. It was badly asphyxiated, requiring a half hour's persistent warm bathing, tongue traction, mouth to mouth lung inflation, to establish respiration. The mother continued in about the same condition, in a semi-comatose state with occasional lucid intervals, until 6 A.M., when she was left for a few hours. Pulse 68. At 11 A.M. found her bright, very little vomiting. Drew the urine and found it heavily loaded with albumin. She retained a little nourishment through the day. The child took some diluted milk with a medicine dropper. In the evening at 7 P.M. found her feeling quite clear headed and comfortable. She made an uneventful recovery, nursed her baby, and now, more than three years from that date, both are in good health.

This case is quoted from my case-book to call particular attention to the treatment. As bearing directly on this subject I desire to quote from an article recently published in the *Annals of Gynecology* from the pen of A. Lapthorn Smith, M.D., gynecologist to the Maternity Hospital of Montreal. He puts the whole matter in a nut-shell and says all there is to be said. The writer has been contending for the same thing for the last fourteen years, but unfortunately his dictum lacked authority. Prof. Smith says:

"What is the best treatment of eclampsia? One that will in the quickest possible manner and with the least possible danger put an end to that fearful vasomotor spasm and allow the blood

to rush into the brain and kidneys so that the woman may regain consciousness and so that her kidneys may at once begin to eliminate the toxin which causes the spasm. Within three minutes of seeing the case I administered a half or three-quarters of a grain of morphine. Is there any other drug which has a remarkable and almost specific power to relax the spasm without doing any harm? Yes; ten drops of tincture of *veratrum viride* hypodermically will relax that spasm in ten or fifteen minutes; we cannot see the arterioles dilating under its influence, but we know that it is dilating them by our finger on the pulse; we feel the pulse coming down from 160 to 60 and even 40, growing softer as it slows. Whether the heart beats 160 or only 40 is not so very important except as an indication that there is a let-up in the spasm of the whole vasomotor system, which is a matter of life and death; in the three cases in which I have used it there was no convulsion later than fifteen minutes after the first injection. When I returned from the meeting of the American Gynecological Society, where Dr. Reamy first advocated this remedy, I requested one of my pupils, Dr. De Cotret, who had just been appointed Director of the largest lying-in hospital in Canada, to try this remedy, and so far he has employed it in over forty cases without a death; no case of eclampsia has died in the institution since the *veratrum* treatment was instituted. Such being the case, I feel it a duty to try and induce others who have many cases every year and of which a large proportion die, to adopt the treatment I have indicated, namely, a hypodermic of morphine followed in five minutes by a hypodermic of tincture of *veratrum viride*, ten minims, repeated every ten minutes until the convulsions stop or the pulse comes down to forty. Then give a quart of salt solution by enema; it will be quickly absorbed by the rectum, and as the spasm in the arterioles of the kidneys relaxes, the water will rush into them, and in half an hour there will be a copious secretion of poison-laden urine. No chloroform will be needed, and no chloral, which latter drug has caused so many deaths ascribed to other causes; no accouchement forcé; just wait until the woman falls into a quiet slumber, half an hour in my three cases, and go home. There will be a normal labor and probably a dead fetus in a day or a week. You may get a fright when the pulse comes down to forty, but there is nothing to fear; I have not been able to find or hear of a case of eclampsia treated with morphia and *veratrum* but without chloral or chloroform that died."

The foregoing views are precisely what the writer published

in the *Annals of Gynecology* in September, 1893. But we desire to add that this treatment will cure any remediable case. But Prof. Smith or any other practitioner, will lose the next case he may have, in spite of any treatment whatever, where the initial convulsion is severe enough to cause cerebral hemorrhage. Cases of this kind are necessarily fatal in anybody's care. Unfortunate is the fate of a woman who may fall into the hands of a practitioner of high or low professional standing whose resources in this fearful complication of parturition are so limited, whose judgment is so faulty, whose reasoning power is so obtuse as to resort to accouchement forcé. Such action deserves prosecution for malpractice! The writer was wonderfully pleased to read in the last number of the *Therapeutic Gazette* an article from Barton Cooke Hirst, M.D., Professor of Obstetrics in the University of Pennsylvania respecting forced deliveries in the treatment of eclampsia. A short quotation is subjoined: "I entered on practice firmly convinced that the rapid evacuation of the uterus was the proper treatment, and I have twice reverted to this view, but increasing experience forces me to the conclusion that it is erroneous. The operative procedures necessary, even with aid of such an excellent instrument as Bossi's dilator, are often followed by injury and shock which an eclamptic patient cannot well endure. I have seen deaths from this cause that might perhaps have been averted by a more conservative treatment." Weighty testimony this, and from indisputable authority!

A rare accident occurred in one of the labors of which an account will be given because I never saw before or heard of anything similar. The patient 26 years, native of Scotland, in weight about 125 pounds, of medium height, was married to her second husband seven months previously. She had twice miscarried with her first husband, her last pregnancy being three years ago. She was taken in labor at full term on July 8th, 1897, in the evening. She was having strong pains. Digital examination revealed only sufficient dilatation to admit point of forefinger. The waters had escaped. The presenting part could not be certainly diagnosed by vaginal touch and she was too tender and nervous for abdominal palpation sufficiently thorough for a satisfactory diagnosis of presentation and position. The os was very rigid. After watching her for some time I noticed no progress whatever in dilatation and that she was bearing her pains very poorly. In the discharges there was not the faintest trace of blood.

The best treatment that I have ever found for rigid os com-

plicated with threatened nervous exhaustion is some form of opium in large doses. Three tablets, each containing morphia sulphate, gr. one-fourth; atropin sulphate gr. one-one hundred and fiftieth, were given hypodermically. I lay down until 4:30 A.M., at which time I found that the pains were regular and strong, and that the patient had had a good rest. Signs of a slight hemorrhage were found in the bed. Examination revealed second stage well progressed, a breech presenting in the sacro left anterior position. The presenting part had passed entirely out of the uterus and was resting under the pubic arch. The labor made slow but steady progress to a complete and safe delivery of a large male child which soon breathed and cried lustily. There was no perineal laceration. The placenta was delivered in fifteen minutes with vigorous contractions of the uterus. After delivery of the placenta I noticed something protruding from the vulva, which, with very gentle traction, separated from a slight internal attachment, when it was discovered to be the os uteri completely undilated and with an irregular portion of the cervix from a half of an inch to an inch wide all around torn off with it! It was literally an amputation of the cervix, in the absence of dilatation, by the vis a tergo of active uterine contractions. Not a half pint of blood was lost during the whole confinement, notwithstanding this accident. No anesthetic was given. No particular pain was complained of.

Had this complication occurred under powerful uterine action, goaded on by ergotic stimulation, it would have been less wonderful, although such an event I have never heard of. But in this instance the tear took place while the patient was under the sedative and eminently relaxing influence of the morphia and atropin. Had I been warned beforehand of the possibility of such an occurrence what more powerful therapeutics could I have exhibited to prevent it? Moreover it happened without her being apparently in the least degree conscious of it. No hemorrhage. No odor to lochia. She had no milk for the babe who thrived vigorously on the bottle. She developed a phlegmasia alba dolens of moderate severity on one side and was very weak and feeble for weeks. Her temperature would range from 100 to 103 degrees. Tablets of proto-nuclein and elixir digitaline comp. seemed the most efficient medication. Milk and stimulants were used freely. After getting up she menstruated regularly but rather more profusely than formerly. Later she fell under the influence of a quack and came to me to ask my advice respecting "an operation" which he

had advised her was positively necessary. This gave me a good opportunity of examining her and I found the stump of the cervix nicely granulating with healthy appearing tissue. Shortly after I lost sight of her.

The following case is cited as an interesting example of some unique social conditions which a physician's calling sometimes compels him to observe. Was called in haste to treat a case of "cramps" in a young woman. On arriving the peculiar nature of her seizures excited my suspicions. On being questioned she positively denied pregnancy. In fact her wedding had been set for that very evening. Insisted on an immediate examination and found labor well progressed with the birth of the child imminent. Urged the lover who had been active in calling me, to get a clergyman and have the ceremony performed immediately. He did so, but the labor was so precipitate that the denouement presented the spectacle of the father reaching over the bed to clasp the right hand of his agonized sweetheart, the clergyman reading the ritual with all possible speed, and the doctor holding back the head of the child with all his power, that it might be born in wedlock!

In the preparation of this paper the writer has been guilty perhaps of tedious repetition of ordinary text-book matter. But sometimes a review of such matter is salutary, and one is often more apt to take it if ambushed into it under a deceptive caption than he is to deliberately set about it as a matter of routine study. His only apology for presenting it is his successful management of so long a series of consecutive cases each one of which was the subject of careful study and record. The foregoing histories clearly show that the series was not lacking in individual cases of great danger, and, at times, of desperate extremity. That he did not lose the valuable life of a single mother is a matter of congratulation to his patrons and of pride to himself.

BUTTE, MONTANA, February, 1904.

RELATIONS OF THE ALIMENTARY CANAL TO PELVIC DISEASE.

BY

W. P. CARR, M.D.,

Professor of Physiology and Clinical Surgery, Columbian University,
Washington, D. C.

DURING the last few years I have had forced upon me such an accumulation of evidence of the intimate association, and interdependence, of various abdominal and pelvic diseases that I feel it my duty to offer a plea for fuller recognition and more thorough and systematic examination of the alimentary system in cases of pelvic disease.

We have long known that malnutrition and constipation may cause, or maintain, disorders of the female generative organs. The, more recently discovered, common association of gall-stones with chronic appendicitis, and with malignant disease in the hepatic region, and with pancreatitis has suggested a common cause for all these affections in some gastro-intestinal catarrh.

The frequent association of chronic appendicitis with tubo-ovarian inflammation points in the same direction. In many cases the appearances indicate a disease of long standing in the appendix which is adherent to a more recently inflamed tube or ovary, and the inference is strong that the inflamed appendix was the cause, or at least a predisposing cause, of the pelvic disease. Both may have been due to an intestinal catarrh of long standing.

More recently still, attention has been called by several German writers to rectal catarrhs and ulceration as a common cause of pelvic inflammation. It would seem, therefore, that the gynecologist should be a fairly good stomach specialist and rectal surgeon.

There are many ways in which gastro-intestinal disorders may become potent factors in causing or maintaining disease of the pelvic organs, but they may be classified under three heads: (1) Chemical abnormalities, (2) mechanical disturbances, (3) bacterial invasions.

Chemical abnormalities carried to the tissues by the blood may be either a lack of certain nutritious elements upon which the health and vigor of the body cells are dependent or the presence of harmful and injurious products of faulty digestion and bacterial fermentation in the intestine and stomach. It has been con-

clusively shown by physiologists that the columnar epithelial cells lining the villi of the intestine and the mucous membrane of the stomach and intestine play an important part in maintaining the nutritive value of the blood plasma. Normally, nitrogenous food is converted by secretions of cells lining the glandular ducts of the stomach and pancreas, into peptones or tryptones. We find peptones and tryptones, which are readily diffusible, in abundance in the stomach and intestine; but not in the blood. In fact, peptone, injected into the blood, is a powerful poison and causes rapid destruction of blood cells. On one side of the wall of columnar epithelial cells lining the intestine we find the poisonous peptone, on the other side we find nourishing serum albumins, serum globulins, fibrinogen and other substances of which blood plasma is composed. The peptone is changed in its passage through the epithelial cells. These cells are known also to exert a selective action to a certain degree in absorbing materials from the alimentary canal. They do not refuse to take up all poisons; but there are many deadly poisons that they do refuse to absorb. Among these may be mentioned the virus of the cobra and rattlesnake, curare and many toxic products of proteid decomposition. Other poisons are absorbed in a very slight degree by these epithelial cells when they are in a healthy condition, but more rapidly when they are diseased. A sick cell gives off an abnormal secretion, always more or less harmful and often violently poisonous. Take a connective tissue cell injured by heat, for example. Apparently part of its protoplasm breaks down into a chemical having an action similar to arsenic, and which, like arsenic, when introduced into the blood, causes violent inflammation of the intestine. Hence the duodenal catarrh and ulceration following large superficial burns. The intestinal canal, especially the lower bowel, always contains poisonous amides and amines and may contain putrescin, cadaverin, neuridin, saprin, cholin, leucin, tyrasin, skatol, indol, taurin, lysatin, amido succinic acid, and many other deleterious or poisonous substances that are absorbed but little, if at all, by the normal mucous membrane. There are other substances, such as oxycholin, which is a powerful heart poison, and some of the amines of the alefines, and bacterial products that are not only readily absorbed, but that damage the epithelial cells so that still other poisons are admitted. This subject is so extensive that I can only touch upon it sufficiently to give an idea of the possibilities in a given case. Now, suppose we have a gastro-intestinal mucous membrane damaged by chronic catarrh.

In the first place the cells of the peptic glands and perhaps of the pancreas will be sick cells, and abnormal secretion follows. This leads to faulty digestion and favors bacterial activity. Secondly, the absorbing cells are sick cells, and, in addition, have an unusual amount of work to do because they have an abnormally complex and poorly prepared material to absorb.

They do their work badly, and, as a consequence, the blood plasma is furnished with a small amount of nutritive material of poor quality and loaded with more or less poisonous materials in addition. All the cells of the body show the effects of this condition in diminished or perverted function. We have only to know the normal function of a cell to predict the result. Motor nerve cells send out feebler impulses to muscles. Sensory nerve cells give perverted sensations of pain when stimulated, connective tissue cells become lax, the spongioplasm loses its elastic strength and power of holding other tissues in place. The weight of the stomach, intestines and uterus cause a gradual stretching of the connective tissue that should hold them in place. The epithelial cells of the uterine mucosa secrete a perverted and irritating mucus, and lose their resistance to bacteria. The heart muscle, as well as the heart nerves, becomes weak, and the muscular fibres of the arteries relax. Venous congestion follows and augments any local disorder that may have started. The nerves and the mucous membranes often seem to feel the condition most. Conjunctiva, pharynx and vagina all show the same flabby, congested condition.

All of us have had such women come for treatment of leucorrhea, backache, dragging sensations in the pelvis, headaches, constipation, and sometimes more serious pelvic disease. For such a condition allowed to go on is likely to lead to endometritis, salpingitis and other serious inflammations, simply because the tissues have no resistance to germs that gain entrance into the vagina, and gradually extend to the uterus tubes and peritoneum. The saving factor in such cases is the fact that comparatively harmless germs, being much more numerous, are usually the ones to gain entrance, and choke out more rare and dangerous varieties. Most of us have prescribed tonics for such cases and used tampons, or pessaries, or curetted, or done some plastic operation, with results that were far from satisfactory.

Often, whatever benefit accrued was due to the tonic, rest and diet, rather than to any local treatment, and in a short time the patient relapsed into her former condition. But have we traced the trouble back to its real origin in a gastro-intestinal catarrh,

or gastro-enteroptosis, and made a careful diagnosis and given careful scientific treatment for the true condition? In many cases we have not. In a few we have, and have seen a gradual and complete metamorphosis, a return to vigorous, rosy health. Too many such cases are neglected by the gynecologist to whom they sometimes become a "bête noir."

We should either be prepared to treat them scientifically, or refer them to some one who will do so. I have had under my observation for years a considerable number of women who suffer from leucorrhea and pelvic symptoms whenever their alimentary canals get more than usually deranged; and who recover more or less completely, without any local treatment, upon proper diet and alimentary remedies.

I firmly believe that a woman who has a good digestion and good general health will never be a sufferer from chronic uterine catarrh. Her catarrhs will either get well or result in severe acute inflammations. On the other hand, I believe there is little use in curetting the flabby catarrhal cases, or giving them any local treatment unless the digestion can be simultaneously improved. But in just such proportion as the digestive disturbances are improved, the local condition will improve; and this improvement will often occur without local treatment. The great majority of chronic digestive diseases may be cured, or very greatly relieved, by modern scientific treatment. I shall not attempt to discuss this treatment except to say that the case may after all come back to the abdominal surgeon for gastro-enterostomy, or the relief of prolapsed or displaced organs, other than the uterus. I apparently made a brilliant cure in one case by removing a fatty omentum weighing at least two pounds that was dragging the stomach down into the hypogastric region, and the claims of gastro-enterostomy as a cure for gastric ulcers and catarrhs seem to be well founded. Some mechanical causes of pelvic disease originating in the bowel are well recognized. Among these may be mentioned pressure of fecal accumulations in the rectum, causing direct displacement of the uterus, or influencing its circulation, or both. The treatment of chronic constipation should not be confined to giving cathartics. The cause should be looked for and habits of life and diet corrected. It is a large subject in itself.

Enteroptosis or gastro-enteroptosis may cause pressure in the same way, either directly upon the uterus or upon its veins. Appropriate treatment gives great relief in many cases.

Peristaltic movements of the intestine may act mechanically in carrying pus or infectious material from one part of the pelvis to another, or from the pelvis to the general abdominal cavity.

A drop of infectious material may be carried from a leaking tube, or appendix, to the opposite side of the abdominal cavity, and cause a local inflammation there, that usually subsides in a day or so, but which may for a time overshadow the chief and original lesion and obscure the diagnosis.

Pain also is caused mechanically in two ways: First, by the rubbing of inflamed peritoneal surfaces over each other; and, secondly, by contractions of the muscular coat of the bowel in attempting to expel flatus or other irritating matter. Both cause pain that may be so severe as to produce reflex nausea and vomiting, and thus interfere with nutrition. Under certain circumstances it may be of great advantage to stop the peristaltic movements of the bowel, and thus stop both the pain and the spreading of infection.

It has been repeatedly demonstrated that this can be done with certainty by washing out the stomach, giving no food nor medicines by the mouth, with absolute rest, and rectal alimentation.

As soon as the alimentary canal, or even the upper part of it, becomes clean and empty, peristalsis ceases, pain ceases, nausea and vomiting cease, and inflammations usually cease to spread. But the treatment must be thorough to accomplish these results. Neglect of a single detail is enough to make a failure.

Under the third head of bacterial invasion may be mentioned the infection of pelvic organs from a chronic appendicitis, or ulcer of the bowel, and direct extension of disease from catarrhal conditions, ulcers, fissures, and piles in the rectum. Kehrer¹ and Muller² have both written papers, compiled from careful examination of a large number of cases, showing that most cases of disease in the posterior part of the pelvis, not gonorrheal, are of intestinal origin, and begin in catarrhal conditions and ulcers of the lower bowel. In their opinion, the removal of uterine appendages is useless in these cases. This is an important observation, if true, and should certainly lead to a careful examination of the rectum in cases of pelvic disease. My own observation has been limited in this respect, but I have seen a few cases in which the uterus was fixed and bound by posterior adhesions, with the tubes and ovaries normal, or nearly so, and with marked catarrhal ulceration of the rectum.

It is pretty certain that the inflammation in these cases started

in the intestine. Rectal disease is very common, and it is reasonable to suppose that it may be a frequent cause of pelvic inflammation. Some of the rectal lymphatic glands lie just behind the peritoneum in Douglas' cul de sac. Most of the rectal lymphatics terminate in the sacral glands which lie in the hollow of the sacrum.

It is interesting to note that the appendicular gland in the meso-appendix frequently receives afferent vessels from the right ovary.

It is easy to see how infection entering a rectal ulcer, fissure, or abraded hemorrhoid may be carried into the pelvic cellular tissue by the lymphatics, by the hemorrhoidal veins, or by direct continuity of tissue. More extended observation will be needed to determine the percentage of pelvic inflammations of rectal origin; but it seems probable that the percentage will be quite high.

In view of all the facts, it would seem that we have been too apt to consider all pelvic cases of uterine origin, and that we should in future make a more careful and systematic attempt to trace each case to its true source. This will lead, I am sure, to better and more rational treatment.

1418 L St., N. W.

NASAL DYSMENORRHEA.¹

BY

G. KOLISCHER,
Chicago, Ill.

THE origin of this term is peculiar. In the early '90's Fliess claimed that labor cases could be conducted absolutely painlessly by the application of cocaine to certain spots of the nasal mucosa. Tests of this method recommended with great enthusiasm failed to show any convincing results. In '97 Fliess reappeared on the gynecological field and alleged that certain cases of dysmenorrhea could be promptly relieved by applying a 20 per cent cocaine solution to the so-called sexual points in the nose and, furthermore, that the cases belonging to this class could be definitely cured by cauterizing these nasal spots. He readily divided all cases of dysmenorrhea into those which cannot be successfully treated by

¹Chicago Gynecological Society, March 23, 1904.

cocaine, and those which readily yield to cocainization, or cauterization of the sexual points in the nose, and therefore called the latter ones "nasal dysmenorrhea." In order to support this rather arbitrary classification, he stated that at the time of menstruation these areas increase in size and sensitiveness, appear to be cyanotic and bleed easily.

Fliess' publications never met with any general success and only sporadic reports have appeared favoring his theories and suggestions of therapy.

It now remains to inquire whether criticism of the existing reports and personal experience will serve to prove or disprove Fliess' theory and his claims of a successful therapy for dysmenorrhea.

The general basis of his theory, the allusion to the sexual spots in the nose, is very easily disposed of. The exponents of this theory will tell us that certain male animals get into sexual excitation by the odor of certain secretions of the genitals of the female partner. The same, they say, holds good, more or less, in the human race. At the same time, we are told that the ancient Greeks knew about the favorable influence of perfumes on the sexual desire and activity. The researches of alienists have shown that the susceptibility to the exciting influence of the odor of these secretions belongs to the realm of sexual pathology. I do not need to dwell upon the point that, speaking in a general way, the influence of these odors, as a rule, has a diametrically opposite effect, while it is unnecessary to compare these odors to perfumes. A great many of all these alleged stimulating influences belong to the rather shady chapter of aphrodisiacs. Inquiry among rhinologists discloses that the overwhelming majority of these specialists do not know of any relation between periodical swelling of parts of the nasal mucosa and menstruation. They will state at the same time that, especially in large cities with their polluted atmosphere, very few individuals will be found whose nasal mucosa is in normal condition so that very few can be found whose sexual nasal spots are not swollen or cyanotic or easily bleeding, although a great many of these individuals do not suffer from any menstrual troubles. Fliess, however, cuts short any objection of this kind because he says that if cocainization fails in a case of dysmenorrhea, then—it isn't a case of nasal dysmenorrhea. He apparently scores a strong point for his theory in reporting that in some cases of dysmenorrhea he failed when he painted other

spots of the nasal mucosa with cocaine, while applying the cocaine to the congested and easily bleeding spots furnished quick relief. We all know that a raw mucosa more readily absorbs cocaine than a mucosa with intact epithelial covering, a fact for which some patients whose bladders have been cocainized have paid with their lives. The way in which some advocates of Fliess' method will argue is exemplified by their statements that the application of cocaine to the nose will fail to produce any general symptoms such as exhilaration and so on. Every day's experience proves that this statement is entirely false. We know of any number of cocaine fiends, among them quite a few physicians, who use their favorite drug by snuffing the cocaine, or by painting the inferior turbinates with cocaine solution, which, however, is never as strong as Fliess advocates for his treatment. Another observer says that in order to prove that the therapeutic effect was not due to suggestion, he painted the sexual spots with good effect with cocaine, while another rhinologist painting the same spots at the occasion of the next menstruation with an indifferent fluid did not influence the pain at all which, however, readily subsided when cocainization was employed. If we do not want to stretch too forcibly the point in favor of Fliess, we certainly have to believe that an occasional favorable influence of cocaine is simply due to the absorption of the cocaine and the subsequent general influence of the drug.

In scrutinizing the favorable reports of Fliess' theory and treatment, one will be forcibly struck with the lack of report on the most important question, that is, of hysteria. We know now that hysteria plays a paramount rôle in the decision upon the dignity and origin of gynecological pain, especially Lomer called the attention to the fact that hysteria is one of the most frequent causes of hypersensitiveness of intraabdominal organs. He reports, furthermore, that in the majority of hysterical dysmenorrhea cases, the endometrium shows an excessive hypersensitiveness.

After one's attention is called to it, one will be surprised to find out how many cases of dysmenorrhea are based on general hysteria and how often a complete cure will be accomplished by following out an appropriate treatment of the hysteria. At the same time, I want to mention the well-known fact that any interferences may bring relief from hysterical pain, which relief may last for various periods of time. As to my own experience, I want to say that in former years I treated quite a number of cases unsuccessfully with cocainization, but, inasmuch as there is a chance for

arguing that these cases were not cases of nasal dysmenorrhea, I wish to report four cases which seem to bear upon this question.

A woman, 30 years of age, suffered from dysmenorrhea for fourteen years. The pain always continued after the flow set in. No anatomical changes which could account for the troubles could be found. Cocainization of the nose relieved the pain promptly. After the pain began at the next period an erosion of the cervix was painted with cocaine; prompt relief followed. At both occasions the patient showed signs of intoxication. The third application of cocaine failed to take effect, the patient being relieved later on and eventually cured by massage and gymnastics.

Second case: Girl 22 years of age; for five years suffered from pains before and after the menstrual flow started. Twice cocainization furnished prompt relief under symptoms of general intoxication. Previous to the third menstruation, the sexual nasal spots were cauterized by a specialist. The following menstruation was again as painful as ever; cocainization of the previously cleansed rectum cut short the pain inside of ten minutes.

Third case: A woman of 33; suffered since her sixteenth year from dysmenorrhea. The attacks varied, in some pains were felt in the uterus and its neighborhood, in some these pains were accompanied by violent headaches, nausea and persistent vomiting. Cocainization. The nose was cocainized for three menstrual attacks. In one there were only abdominal pains, cocainization furnishing prompt relief. In the other attacks, which were combined with headache and nausea, repeated cocainization failed to produce any effect. Careful examination failed to reveal any anatomic changes but characteristic hysterical stigmata were found. General treatment for hysteria put the patient in good general condition and the last eighteen menstruations have been practically painless; no headache or nausea.

In two other cases in which nasal cocainization furnished prompt temporary relief, I succeeded at the two next periods in completely subduing the beginning pains by internal administration of antipyrin.

Incidentally, I would like to mention that the application of a 20 per cent. cocaine solution to a mucous membrane is by no means a proceeding free of danger.

If I am permitted to draw conclusions, I would like to state:

First. The right to proclaim nasal dysmenorrhea as a clinical entity is not established.

Second. The influence of cocaine upon dysmenorrheal attacks,

can be explained by the general intoxication of the system with this alkaloid.

Third. Every patient suffering from menstrual pains has to be examined as to general hysteria.

Fourth. Administration of cocaine, especially in nervous patients, is not to be recommended on account of the deleterious influence of this drug upon the nervous system, and on account of the danger of educating cocaine fiends.

Fifth. In cases in which no anatomical abnormalities and no hysterical foundation is to be found, massage and gymnastics should be administered or the patient should be advised to ride a bicycle.

92 STATE STREET.

TRANSACTIONS OF THE CHICAGO GYNECOLOGICAL SOCIETY.

Meeting of March 23, 1904.

The President, DR. EMIL RIES, in the Chair.

PELVIMETER.

DR. JOSEPH B. DE LEE.—The instrument which I show to-night is not entirely new. An account of it has not been published in the West, but it is so valuable that it deserves presentation before this Society. It is a new pelvimeter to be added to the large number already in existence. This is a special one. The importance of the transverse diameters of the pelvis is becoming more and more recognized. The frequency of narrowing in the diameter between the spines of the ischium and the tuberosities of the ischium requires the use of an instrument which will give us an idea of the degree of such contraction. In order to do this, the distances given by stretching of the fingers are insufficient, because we cannot stretch them and touch both spines at the same time unless the distance is very short. This instrument will accomplish the purpose. You see, it has a pair of blades which separate and a scale at the bottom. The instrument was devised eight years ago, but I did not put it into actual shape until a few months ago. E. A. Ayers, of New York, has an instrument built on exactly the same lines, with the exception that his instrument is shorter, and he has in addition a raised metal finger-like bar which is supposed to rest under the pubis.

The application of the instrument is simple. Under the guidance of two fingers the instrument is passed into the vagina and the arms separated. As soon as the blades are separated the index finger seeks out the spine of the ischium; the end of the instru-

ment is put against the spine, the thumb of the free hand separates the blades, and naturally the tip touches the spine of the ischium on the opposite side. One holds it absolutely symmetrically, the finger feeling only one tip; the eye then reads the scale which will give the difference between the spines of the ischium.

I would like to repeat that this instrument will be found useful, because the number of cases of contraction of the pelvic outlet is in my experience increasingly large.

DRAWING OF LARGE, CHRONIC INFLAMMATORY OVARY WITH ATTACHED PEDUNCULATED CYSTS.

DR. J. CLARENCE WEBSTER.—I wish to present a couple of drawings of some interest. One is that of a large, chronic inflammatory ovary, with two small pedunculated cysts; each pedicle is a slender thread more than an inch in length. There is also a third pedunculated cyst springing from the fimbriated end of the tube, with a long, slender pedicle about four inches in diameter. I have never seen any ovarian structure like it. As far as one can tell with the naked eye these little club-shaped masses seem to be cysts containing fluid, but they have not yet been examined microscopically.

CORNUAL PREGNANCY.

The next drawing is that of a specimen which I have recently obtained from a woman who was almost moribund from intra-peritoneal hemorrhage. The case was diagnosed as one of ruptured tubal pregnancy. She rallied, and when in condition for operation abdominal section was carried out. It was found to be a case of ruptured left cornual pregnancy, and an interesting feature of the case is that the cornu, though fairly well formed, does not communicate with the cavity of the other half of the uterus. The woman had borne children. The corpus luteum was in the ovary of the left side, consequently the case represents one of internal wandering of the spermatozoa. The latter must have passed up the right cornu through the right tube, then across the pelvic cavity, fertilizing the ovum of the left side, which passed into the left tube and developed in the left cornu.

DR. EMIL RIES.—I have operated on two of these cases; one woman was three months pregnant, and the other six months. Both recovered; both had a rudimentary horn separated from the well-developed horn by a fibrous bridge without any opening between the two.

DR. J. CLARENCE WEBSTER.—In reference to the remarks of Dr. Ries, I may say that I have only seen one case similar to the one I have described. Of course, I have seen quite a number of museum specimens. I think the connection usually is only fibrous. I do not recall having seen one in which there was a communicating tube. I am not referring to typical bicornuate

uteri, but to the condition in which one horn is somewhat rudimentary.

VAGINAL CÆSAREAN SECTION.

DR. J. CLARENCE WEBSTER.—I should like to report one case which I regard as one of extreme interest, illustrating the value of vaginal Cæsarean section as a valuable means of performing *accouchment forcé* in certain conditions. The woman was a primipara, seen by Dr. Effa Davis, who asked me to see the case. Her condition was very bad. When seen she was edematous from head to foot; the urine was loaded with blood, albumin and casts. Energetic measures were taken to reduce the edema and to improve her condition. Later the edema disappeared but there was not very much change in the urine, and the eye symptoms were threatening. It was decided to deliver her. She was in the seventh month of pregnancy. When it came to the consideration of the method of delivery, it was found that the cervix was nearly four inches in length, a condition of hypertrophic elongation. It was evidently impossible to dilate and deliver the fetus. If a bag had been introduced and the patient had been put to bed very likely the process would have been extremely long. I therefore decided to perform the vaginal Cæsarean operation. The operation consumed about an hour. The technical difficulties were considerable on account of the comparatively undilated condition of the vagina, but more particularly on account of the great length of the cervix. However, there was very little hemorrhage attending the operation. The vaginal mucosa was divided mesially an inch below the cervix and this incision was carried around the cervix. The cervix was divided anteriorly and posteriorly, the lower uterine segment was incised in the middle line in front, and after stripping up the bladder anterior to the peritoneum the child was turned and delivered. There was an extremely bad condition of adherent placenta, and it was necessary to separate it manually. The incisions were then closed and the cervix amputated. The patient made a satisfactory recovery. The condition of the urine has markedly improved; she is practically well. I do not know what the latest report is, but only a trace of albumin was found when the urine was last examined.

A point of further interest in this case is this: I performed the operation without the use of an anesthetic, not even using local infiltration anesthesia around the cervix. The patient stood the operation well. She complained somewhat; my reason for operating without anesthesia was that I felt general anesthesia might be too much for her.

This is the second time in which I have carried out the vaginal Cæsarean section, with the complication of hypertrophic elongation of the cervix, and I have felt from my experience in these two cases that I should not hesitate to attempt the operation in similar instances.

DR. GUSTAV KOLISCHER.—I agree with Dr. Webster in regard

to the indication for the operation (vaginal Cæsarean section) in his case, but I would like to ask him whether he considers it necessary to split the cervix both anteriorly and posteriorly, as was done in the case he reported.

In performing vaginal Cæsarean section one of the technical difficulties or obstacles we encounter is trying to pull down the entire cervix. If we split the cervix anteriorly and pull down the anterior part of the lower uterine segment only there is no difficulty whatsoever. It is, furthermore, an entirely wrong conception that we are gaining more space for the passing fetus by adding a posterior to the anterior incision; the cervix can be made wide open by one incision.

DR. CHARLES S. BACON.—I was much interested in the report of Dr. Webster's case, because I have had one that was in some respects similar to it, and in which I resorted to vaginal Cæsarean section for threatened eclampsia and for serious eye symptoms. I shall not enter into the details of this case which I shall soon report more fully; but I desire to say that an additional indication in my case was furnished by the child, which was viable. The parents were extremely anxious to save the child if possible. The possibility of saving the child is much greater by means of Cæsarean section than it is by a long labor. The operation in my own case was easily carried out; the cervix was not so long as in the case described by Dr. Webster. I made an incision in the anterior and posterior walls, but came to the conclusion after the operation that the incision in the posterior wall was not necessary for a premature child, and in the future I think I should incise the anterior wall alone in a similar case. The incision is long enough to deliver the head of a child which is not more than 32 or 34 weeks old.

DR. WEBSTER (closing).—In my case I divided the lip anteriorly and posteriorly simply on account of the large size of the cervix. I would not attempt that in an ordinary case, because the experience of those who have done this operation shows that it is only necessary to do what Dr. Kolischer indicated, namely, to divide anteriorly and pull down successive portions of the wall on each side of the incision.

DR. GUSTAV KOLISCHER read a paper entitled

NASAL DYSMENORRHEA.¹

DR. GEORGE E. SHAMBAUGH (by invitation).—Mr. President: I am very glad, indeed, to hear such a good paper on this interesting topic. The subject of nasal reflexes is one of the most interesting the rhinologist has to deal with. It is also a subject about which we feel the necessity of proceeding with a good deal of caution, because one is very apt to become over-enthusiastic and "hatch to it an importance that it does not warrant.

The attention of the rhinologist was first forcibly called to this subject of nasal reflexes through an article written by Hack in

1882, and published in the *Berliner klinische Wochenschrift*. This article was shortly followed by others by himself and by his enthusiastic followers, the result being that the subject was taken up and investigated with a great deal of enthusiasm. This enthusiasm was much more pronounced among the Germans than other investigators; it became so great that many rhinologists seemed almost willing to attribute the majority of general pathological conditions to what they could see through the nasal speculum. The subject was overdone. Rhinology has passed through the climax of this enthusiasm over the subject of nasal reflexes, and we are able now to take a more conservative view in regard to the matter.

In regard to sensitive areas in the nose, I will say this, that Hack claimed at first that the anterior end of the inferior turbinated body was the sensitive area, and that by cauterizing it with the galvano-cautery the condition could be relieved. Later on he found that the posterior end of the inferior turbinated body was frequently the sensitive area. Some of his followers also found that the anterior end of the middle turbinated body was the sensitive point. Others found the area of the septum directly opposite the anterior end of the middle turbinated body, the so-called tuberculum septa, to be the point at fault. Some of them found a sensitive area over the middle and inferior turbinated bodies; others discovered a sensitive area on the posterior part of the septum where there is located on either side a small amount of spongy tissue. Almost every point in the nose has been blamed by one author or another as the origin for nasal reflexes. The situation seems to be that any point in the nasal mucous membrane may become specially sensitive and may be the cause of a nasal reflex.

The difficult point in regard to reflexes is the diagnosis. Hack and his enthusiastic followers were content to make a diagnosis as Fliess has done by operating on the cases, and if the patient was cured, then it was a case of nasal reflex; if the patient was not cured it is not a nasal reflex. This is a sloppy way of making a diagnosis, and has undoubtedly led to unjustifiable operations on the nose. I do not think any rhinologist of to-day would feel justified in proceeding in that manner to make a diagnosis of nasal dysmenorrhea or of any other nasal reflex without first trying other methods.

The simplest method of making a diagnosis of most nasal reflexes is to use the nasal speculum, with reflected light, examine the nose to see whether there are any abnormal or pathological conditions present or not; to see whether the inferior turbinated body is excessively large or hyperemic; examine the so-called tuberculum septa; examine the region where polypi are likely to develop; also to see whether a large nasal spine projects across the nose and touches the outer wall. In case you find a condition of this kind, or if you locate a point where you suspect the source of the reflex trouble, you irritate the point with a probe and note

the result. If you get a negative result you have not a nasal reflex to deal with. If, however, you have a positive result, you cannot be positive that you have to deal with a nasal reflex, because in a patient the subject of a neurosis irritation of the highly sensitive mucous membrane of the nose may produce manifestations of a neurosis, like asthma, from which the patient may be suffering. The use of the probe does not always give positive evidence in regard to the diagnosis. Cocaine has been used; eucain, which is less poisonous than cocaine, has been employed; and Rosenberg has used applications of menthol to the nose in strong solutions. The method of procedure is to examine the nose, as previously suggested, to look for areas which you may suspect as being sensitive; then apply cocaine. In applying cocaine I would not use it in twenty-per-cent. solution, as is frequently done in Germany. Most of us in this country use five or ten per cent. solution with satisfactory results even for operations. I believe we get fully as good results with weaker solutions. Where one applies cocaine to the mucous membrane of the nose, and applies it in any quantity, I think we get as satisfactory results from two or a five per cent. as from a twenty per cent. solution. Cocaine should be applied to the point where you suspect sensitiveness. If you get a negative result in a case of asthma, for instance, you can conclude that the asthma is not due to a reflex from that point. If, however, after applying cocaine to a sensitive area you get positive results, that is, relief of the reflex, which may be dysmenorrhea or asthma, the situation is somewhat different. One is not justified, however, in drawing the conclusion that he has positively to deal with a nasal reflex which has been relieved by cocaineizing a sensitive point in the nose, because, as has been pointed out by the reader of the paper, we may have to deal with an individual who is the subject of neurasthenia or hysteria, where the application of almost anything to the nose or to any other part of the body might through suggestion produce a favorable result.

After the trial of these two methods, as a last resort, one can, as was done in the beginning by Hack and his enthusiastic followers, operate on the nose. I have here two specimens that are labeled, so that you can see the usual points in the nose which are picked out as the sensitive areas. After the probe has been tried, and cocaine has been employed, and one gets an unsatisfactory result, he may proceed to operate on the nose. For instance, if there is a large nasal spine present, or an hypertrophied condition of the inferior turbinated body, these may be removed or catueterized with acid, or with the galvano-cautery, and the tuberculum septa is treated in the same way. When we get to the middle turbinated region the rhinologist is very cautious in the use of the galvano-cautery on account of the danger of meningitis developing. Trichloracetic acid is safer in such cases.

To base a diagnosis upon the result of the operation is not at all positive. For instance, you operate upon a case and afford no

relief to the patient so far as the reflex, the asthma, or dysmenorrhea is concerned, or whatever it may be, that is pretty conclusive that the patient is not the subject of neuroses caused by the irritation of that point in the nose. On the other hand, if you get a positive result, and there is relief of the symptoms, you are not safe in diagnosing the condition as a reflex. There is where Hack and his followers made a mistake. The favorable results which they brought about were doubtless often due to the fact that they were produced by suggestion, thus lessening the symptoms. It is well to recognize the fact that where a person is the subject of a neurosis caused by a peripheral irritation of some nerve center a strong irritation which reaches the nerve centers through another source will cause cessation of that particular neurosis, temporarily, at least. Whether the nose is cauterized or the finger cauterized there will be a temporary favorable effect. I believe there are cases of reflexes from the nose, but it is often very difficult to make a positive diagnosis; consequently it is a subject about which we should be very cautious in proceeding, and not allow ourselves to become unduly enthusiastic over temporary favorable results.

DR. KOLISCHER (closing the discussion).—I have not much to say as Dr. Shambaugh has supported my views. I am sorry, however, that some of the members who have had experience with this treatment did not say something, as it ought to be criticised as severely as possible. If the practice is not condemned a great many practitioners will feel inclined to try it. Cocaine is a dangerous drug. I am more afraid of cocaine anesthesia than I am of chloroform or ether anesthesia, because I have seen too many patients die from cocaine anesthesia. We are perfectly helpless if cocaine poisoning takes place. If a patient should collapse from chloroform narcosis we can do something to save life; but in a case of cocaine poisoning we are practically helpless. This treatment is used in cases in which proper gynecological examinations are not made and diagnosis is neglected. A careful examination will usually reveal the cause of dysmenorrhea, and there is hardly any form of dysmenorrhea which cannot be relieved or cured after a correct diagnosis has been made.

DR. J. CLARENCE WEBSTER read a paper entitled

LOCAL ANESTHESIA IN GYNECOLOGICAL OPERATIONS.

DISCUSSION.

DR. JOSEPH B. DELEE.—Right in line with what Dr. Webster has said, I wish to refer to and propose the use of partial anesthesia. If, for example, a slight operation is to be performed upon the uterus, such as a curettage, it may often be done without the use of any anesthetic whatever. I have done dilatation of the cervix and curettage in a number of cases without any anesthetic, except, perhaps, a little suggestion for the patient to be brave. Also, the opening of pelvic abscesses may be accomplished without any general anesthetic in a brave patient, so that all that is

necessary when the incision is to be made is to give a few whiffs of chloroform and the thing done in about thirty seconds or more. Thus a general anesthetic can be avoided in many instances. The same is true of packing or taking gauze out of the peritoneum or vagina and small operations. Nitrous oxide gas has been found successful for these purposes. The pain incidental to the removal of gauze from the pelvic cavity, especially in connection with the peritoneum, is not small, and nitrous oxide gas has been found to be a very valuable agent for that purpose.

DR. EDWARDS.—I have been very much interested in Dr. Webster's paper, as I have had a small experience in operating without anesthesia. About a year ago I was in Syria, and while there operated in the Mohammedan Hospital for several weeks, and my friend there encouraged me to operate without anesthesia. I was very loth to do this at first, as the case was one of tubercular glands of the neck. But he assured me that it was a rare thing for him to use general anesthesia. After a few days I became accustomed to the people, and found that they do not react to pain as Europeans do. We did repeatedly herniotomies, opened the abdomen, removed tubercular glands of the neck, made amputations, etc., without general anesthesia. I remember one case where the eye was removed and the optic nerve cut off without a murmur or complaint of pain.

DR. GUSTAV KOLISCHER.—Dr. Webster's paper is a valuable contribution to our knowledge of the possibilities of infiltration anesthesia. The first man who made extensive use of local anesthesia by infiltration in gynecological operations was Saenger. He confined himself, however, exclusively to plastic operations on the perineum, vagina and cervix, with infiltration anesthesia. The employment of infiltration anesthesia for laparotomies is of recent date, and every report on the subject should be hailed with pleasure, particularly when such a report emanates from a clinical teacher. It is absolutely true that among certain races we will succeed in supplanting certain forms of anesthesia by suggestion or command. That is one of the explanations for the enthusiastic reports of certain Russian physicians regarding blue light anesthesia. It is said that Russian physicians operate under the influence of blue light, and patients do not complain of pain. The mere fact that Russian peasants and Mohammedans do not complain of pain when operated upon without anesthesia does not prove that infiltration anesthesia among highly cultivated, extremely nervous people will not be of value in most instances. However, infiltration anesthesia can be used in many cases where now we employ a general anesthetic. There is no doubt of that. One of the bugbears to all laparotomists is a general anesthesia. A great many operations have been done in this city under local anesthesia. One of our best surgeons (Dr. McArthur) has done herniotomies or operated quite a few cases by the Bassini method under local anesthesia without complaint on part of the patients during or after operation.

There is one suggestion which I might make, so far as the technique of infiltration anesthesia is concerned. Recent publications have shown that the use of adrenalin to the cocaine solution adds to its efficiency, although we have to wait longer for the cocaine to take effect. I have tried this in several cases with satisfactory results.

DR. ÉMIL RIES.—I may state, as my personal experience, that I have used local anesthesia, with the addition of adrenalin, quite extensively lately. Most of the patients with hernias have been operated on under local anesthesia, and without wishing to take anything from Dr. Webster's closing remarks, I wish to say that I have experimented with water, and recently one of our herniotomies was carried out with plain, sterilized water, infiltrated into the tissues, without the patient suffering any pain, and the patient was not one of the kind that stands pain very well.

I have used the Schleich solution, always the weakest solutions in gastroenterostomy, kidney operations, bladder operations, hernias, as mentioned, abdominal as well as inguinal, in appendectomy, etc., and I have been satisfied with the results.

With the addition of adrenalin, one thing is worthy of mention: If you use adrenalin with Schleich solution, the adrenalin, if used in strong concentration, is liable to close vessels that are larger than capillary size, and as you do not see the vessels bleeding during the operation you do not ligate them, and you must not be surprised to have hemorrhage after the operation is finished. If you use adrenalin you must be careful to tie every small vessel you see. This point was mentioned by the man who first advised the addition of adrenalin—Braun, of Leipzig.

In Germany, in gynecological operations, we used to do a good deal of operating without any anesthetic, except possibly sprinkle a little alcohol or plain water on a mask, and I have done many (I don't know how many) plastic operations on the vagina without any anesthetic, curettements without number without an anesthetic, obstetric operations in great numbers without an anesthetic. But I find in any operation where you have to separate the tissues by pulling, for instance, if you want to do an appendectomy by the gridiron method, pulling on the muscles and fasciæ is painful, even if you infiltrate the tissues. If you do not use general or local anesthesia in operating on the vagina, or in doing obstetric operations, where you have to distend the vagina by instruments or by hand, it is painful. In operating on a man or woman where there is any pulling or distension of the organs to be done, I prefer a general anesthetic, even if only for certain acts of the operation. If I have any doubt as to a patient's ability to stand an operation, I would rather begin with local anesthetic and then change to general anesthesia than vice versa.

DR. DANIEL H. WILLIAMS.—Something like two years ago I operated upon a woman in this city at St. Luke's Hospital, removing a tumor which weighed over one hundred pounds. In this operation I used in making the abdominal incision Schleich's so-

lution No. 2. The tumor was emptied completely, and the sac extirpated under the influence of this solution, and it was only when I made traction on the stomach and organs in the upper peritoneal space that I had to resort to a general anesthetic chloroform. The remaining part of the operation was done in about thirty-five minutes after the extirpation of the sac. When I began to close the abdominal incision she complained of pain and the anesthetist gave her a small amount of chloroform to complete the toilet.

I felt then, and I feel now, that there is a distinct advantage in dealing with large tumors under local anesthesia, especially where we have a bad heart or questionable conditions of the kidneys to contend with. In these cases of large tumors it is necessary, as much as possible, to protect our patients from the bad effects of general anesthetics. Since that time I have learned of a surgeon connected with the Northwestern University Medical School in this city using local anesthesia for the purpose of removing a tumor weighing seventy-five or eighty pounds.

I was very much impressed with Dr. Webster's suggestion and also with the remarks of Dr. Kolischer regarding the use of adrenalin in connection with cocaine, believing that it is decidedly advantageous. I used it yesterday in a case of hernia and was very much pleased with it. Its application in operating on large tumors will serve us to a good advantage.

DR. WEBSTER (closing the discussion).—I was led to the employment of local anesthesia because I was convinced of the recklessness with which general anesthetics have been used, and are used, especially in gynecological work. It is very common among operators to carry out extensive plastic work while the patient is in the lithotomy position, afterwards carrying out an abdominal operation. If the latter is complicated the patient may be subjected to a prolonged anesthesia. There can be no doubt that in fatal cases of this kind an important factor in causing death in some instances is the latter factor.

I have noticed the reckless use of general anesthesia both in European and American clinics.

The anesthetist may get an order to anesthetize the patient when perhaps the operator has not undressed. The latter may be delayed in various ways, *e. g.*, talking to friends, and perhaps half an hour or more may elapse from the time of the beginning of the anesthetic to the use of the knife. I am convinced that this is not the exceptional case. When we come to cases in which there is a bad heart, bad kidneys, marked anemia, or chronic wasting disease, we may easily appreciate the risks to which patients are subjected. While I have been endeavoring to cut down to a minimum the amount of general anesthesia in all my operative work, I have further endeavored, in special cases, to abolish that factor altogether, substituting local anesthesia, and although it may not be pleasant to operate under such circumstances, I be-

lieve that the sacrifice of the patient's feelings for the time of the operation is a gain as regards her life.

Dr. De Lee mentioned in his remarks septic cases. I know of two cases in which in a clinic a couple of ordinary pelvic abscesses were opened under general anesthesia that could have been dealt with without any anesthesia in two minutes. They were clinical cases, and the patients must have been under an anesthetic for half an hour or more. We know the degenerated condition of the renal epithelium and of the myocardium in sepsis, and must consider general anesthesia as greatly adding to the risk of operating in such cases.

The remarks of Dr. Edwards were interesting. It is stated that almost anything can be done on a Chinaman in the way of an operation without general anesthesia. My experience has been that the Northern races are much more satisfactory to deal with in this regard than the Southern.

With reference to Dr. Ries' statement as to commencing with a general anesthetic and finishing up without it, I have come to the opposite conclusion. I have found where I have started with a general anesthetic, continuing afterwards without any, the patient has usually been very restless, her movements making it difficult to operate. I had a very recent experience of that kind. I prefer to work as far as I can with local anesthesia, continuing with general anesthesia if necessary.

In reference to the remarks of Dr. Williams concerning the removal of large tumors under local anesthesia, there can be no doubt as to the correctness of his views. Recently, in a woman of seventy years of age, I removed two large ovarian tumors under the infiltration method, and still more recently, within the last few weeks, I operated upon two large ovarian tumors which were unfortunately malignant. Extensive adhesions were present, but the operation was carried out without any impediment on the part of the patient.

With reference to the use of water, I have not tried it. I have operated without Schleich anesthesia, and I presume water has the same influence as operating without Schleich. I doubt if it is worth while to use Schleich anesthesia in some cases. In abdominal operations, where we work inside the abdomen quite a while, after the skin is cut through there is no further interference with it, except by the edge of the retractors. The most sensitive part is the parietal peritoneum.

The observations which I am gradually collecting are interesting from the point of view of the physiologist. Lenander in his monograph, just published, refers to the physiology of the sensibility of the peritoneum, showing that there is great divergence of opinion. One thing seems to be of interest, namely, the relationship of manipulations of the intestines and omentum to pain. Practically ordinary manipulations do not cause pain, but when we draw on the mesentery, on the omentum, or on the broad ligaments, there is pain, and it strikes me that we should consider

those observations in relation to the distress complained of by patients in various forms of enteroptosis.

DR. PALMER FINDLEY read a paper on

CYSTIC DEGENERATION OF THE OVARIES.¹

DR. SANGER BROWN (by invitation).—About twenty years ago, in New York, a strong wave of enthusiasm passed over the gynecological brethren there in regard to the general benefits that were to be derived, especially in nervous diseases, from removal of the ovaries, and many of the members here will remember the ovaries were much more commonly removed then than now. I remember at that time a well-known gynecologist in New York City, after having examined a great many of them, was reported to have said in the newspapers, and I think did say, that in at least fifty per cent. of the patients of the New York City Asylum, their insanity had been caused by disease of their pelvic organs, and furthermore that in a large majority of these cases he could cure the insanity by operating on those organs, but it never transpired that he materially reduced the number of cases of mental trouble by his proposed intervention. I cite this to illustrate what seems to me to be an absurd position which was sometimes taken in those days by gynecologists in regard to a definite etiological relation existing between disease of the pelvic organs and the neuroses and psychoses. Without attempting to separate the neuroses from the psychoses, because they are so often intimately associated, I will merely mention a few of the conditions more commonly met with and considered in this connection. They are insanity, epilepsy, hysteria, neurasthenia, and perhaps chorea, but the first four are certainly the most important. The essential factor in the production of the characteristic manifestation of these neuroses and psychoses consist in morbid activity or interaction of neurons, more particularly cortical neurons, and the most important etiological factor consists in the inherent tendency on the part of these neurons to take on this morbid activity. To illustrate: At one end of the series are found individuals whose neurons are so stable and sound in character that it would be almost impossible to conceive of a degree of mental or bodily stress sufficient to induce in them or to establish in them any of these neuroses or psychoses. While at the other extremity of the series will be found individuals whose neurons are so unstable, so irritable and weak, that it would be practically impossible to devise for them any method of regimen to prevent the development of some of these neuroses or psychoses. The great mass of mankind, however, or for this particular consideration more properly womankind, doubtless lie somewhere between these two extremes in point of liability to the neuroses or psychoses, and in them, therefore, the existence of an exciting cause is of the utmost importance. *In general terms, anything may be regarded as an exciting cause which pro-*

¹See original article, page 762.

duces, more or less constantly or severely, mental or bodily discomfort. I do not believe, as I have already stated, that the pelvic organs of women have any specific influence in this regard, though there may be some rather definite associations connected with them; that is, *per se* I do not think they have any particular influence; and I was glad to hear some of the remarks made by the essayist in this connection, because they coincide so nearly with my own. I have always regarded cystic degeneration of the ovaries as one of the mildest forms of gynecological disease; one of the least irritating, and have believed that a woman might have it for a number of years and never know it unless it were accidentally discovered. That is, it would not interfere with her comfort or general health; but cases that present themselves to neurologists very likely are different from those which present themselves to the gynecologist, and we might take a different view of the importance of the condition naturally. In quite a number of cases that have come to me a careful examination by skillful gynecologists has resulted in the diagnosis of cystic ovaries; more often, however, other diseases of the pelvic organs have been associated with that condition, and in most of them operation has been performed for their correction. I do not think I can recall a case of insanity or epilepsy, where the disease was established, that was materially benefited permanently by operation. But in hysteria, also in neurasthenia, I have seen undoubtedly favorable results following operations, leaving out of consideration the improvement which would naturally result from the associated rest and regimen; of course the coincident effect produced on the mind can't be dissociated in these cases.

In conclusion, I would put the matter in about this way: I do not think any of the neuroses or psychoses, except perhaps certain forms of insanity, where the patient may not be able to cooperate with the surgeon, afford any contraindication against operation upon cystic ovaries, but that much improvement is not to be expected in cases of epilepsy or insanity, though considerable benefit in some cases of neurasthenia and more especially in hysteria may be hoped for.

DR. FERNAND HENROTIN.—This is an exceedingly interesting paper. It is exactly the paper for one to read at a joint meeting of the Chicago Medical and Chicago Gynecological Societies, because it is one that interests all general practitioners as well as gynecologists present. It is also a paper on a very debatable question, and on a point that is of the very highest importance. In all the abuse of gynecology, and in all the bad work that has been done by gynecologists or by men pretending to operate and to do high-class work, there is no one excuse that has been offered that is responsible for more harm done than that of operating for cystic degeneration of the ovary. It is extremely pleasing to hear a paper of this kind read, and although we may differ somewhat from the essayist, he has discussed the subject in a proper, logical manner. He has begun at the beginning, so that

this paper may eventually lead to some sort of evolution of the subject sufficient to give us some landmarks on which to base an opinion for future work.

I must take exception to some remarks made by the essayist. I would change his figures in some material respects. When the Doctor, for example, says that out of forty-odd cases, eleven were affected with evident nervous disorders, and draws conclusions from that small number, I would emphatically say that the figures were wrong. The fact of it is, the number of women who have been operated upon for cystic ovaries is very large, and nearly all of them have had hysteria or general neurasthenia. The proportion of neurasthenics among women who have been affected and have been operated for cystic ovaries is much greater than that mentioned by the essayist.

As regards the results to be obtained from operation, the proportion the essayist gave is misleading. I believe he mentioned about six cases that he was able to follow out and of which he has knowledge. Of course, having knowledge of these six cases, and knowing they recovered, and not mentioning the others, is certainly a point of very little importance. The fact of the matter is, these patients do not get well. Let us take practically all patients as we find them, how do we know their trouble is due to cystic ovaries? I maintain that in a very large proportion of cases the symptoms are not due to cystic ovaries, because I am constantly getting letters of complaint from patients of whom I have kept track, and nine out of every ten complaining letters I get from patients who have had so-called cystic ovaries, with conservative operations, that is, we have removed or resected a portion of an ovary.

As regards the relation of the symptoms, local tenderness is present in cystic ovaries; it is also present in other intrapelvic lesions. Local tenderness and backache are present in any number of patients who are not suffering from cystic degeneration of the ovaries, or in whom cystic ovaries have very little or nothing to do with their trouble, and however good the paper is, the author fails to show practically any distinct connection. It is a fact, gentlemen, we do not know what symptoms described are due to cystic ovaries. We find cystic ovaries, we remove them, or we remove part of them, yet we are constantly meeting with lack of success; we are having trouble with the patients afterwards. Maybe I do not know how to differentiate these cases; but confession is good for the soul, and it is a good thing for us to tell in how many cases we fail to effect relief or cure. I have had hundreds of cases I would like to report some day, but I am waiting until I get further along, so as to be able to tell what proportion of them are relieved and be able to give some reason for my failures. Some of these patients never return to us, because they become disgusted with doctors in general, and nurse their ills quietly. I firmly believe that forty per cent. of the cases in which so-

called conservative operations are performed on women with cystic ovaries, without any other perceptible lesion, are followed by no amelioration of symptoms or only partial cures. I believe, however, a very large proportion of them eventually can be cured, when they have suffered long enough, by a more radical operation, and yet I would not advocate radical operations for a great many of these patients when first seen. I speak plainly in this way, so that we may encourage the reading of papers such as this before such audiences—papers which are careful, earnest, and written in the proper spirit, as this paper has been, and discuss this subject openly and frankly and get at some of the truth in regard to cystic ovaries.

Dr. GUSTAV KOLISCHER.—I think the problem we are confronted with to-night is whether so-called small cystic degeneration of the ovaries is a clinical entity or not. On the one side, we have Nagel, Ries, and Fiegler, who state that the so-called small cystic degeneration of the ovaries is not a pathological condition. On the other side, we have quite a number of gynecologists and pathologists who believe it is a pathological condition. Who are we going to believe, provided we admit that both parties have the same dignity and are entitled to the same respectful consideration, so far as their pathological researches are concerned? Evidently, we believe those whose views are supported by clinical evidence. What is the clinical evidence in these cases? We know of any number of post-mortem examinations on women in whom small cystic degeneration of the ovaries was found, these women did not die from operations, consequently did not have the least gynecological trouble.

In examining patients, we can make an exact diagnosis of cystic degeneration of one or both ovaries, and they do not develop pelvic trouble. This does not support the statements of those histologists and pathologists who believe that small cystic degeneration of the ovaries is a clinical disease and should be operated on. So far, no histologist has proven that there is anything of a neoplastic character in these so-called small cystic degenerated ovaries.

Dr. Findley tells us that we should confine our operations to those patients in whom we are absolutely sure by clinical examination that their complaints are due to no other lesion. We know, for instance, that the so-called Charcot's Ovarie dominated for quite a while; but we know now that the symptom that he talked about does not exist in his sense. We know that practically we can excite the Ovarie from any point of the body in a hysterical person. I call your attention to hysteria, which has been neglected.

Dr. Webster tells us that when he opens the abdomen under Schleich's infiltration anesthesia, and handles the ovary, very little pain is felt by the patient. Dr. Findley, on the other hand, says that if he palpates the ovary, with cystic degeneration and pain is present, the ovary should be operated on because the pain

is due to that. Normally, however, the ovary is tender if you press it. It would mean the same thing if we were to remove every testicle that is sensitive to the touch. It is not sufficient without clinical evidence simply by examining the patient to determine the seat of the pelvic trouble. Furthermore, just because we are unable to detect any other condition, to accuse the small cystic ovary as the seat of nervous trouble and pains, is entirely wrong. There is only one way of determining the source of intrapelvic trouble, and that is to treat the patient, and if we succeed in curing her complaints without removing the small cystic ovary or ovaries, it shows that the ovary was not the cause of her trouble. In case we fail with all treatment of a non-operative character, we may consider, as a last resort, the forlorn chance of operating on such a small cystic ovary.

The art of treating a gynecological patient is almost forgotten and it is to be hoped that Ries' plea will help to redetect this art, and revive it.

DR. ALBERT GOLDSPOHN.—This subject naturally interests me very much, inasmuch as it has been my lot, according to gynecological literature, at least, to be a pioneer in stopping the removal of ovaries for so-called cystic degeneration nearly altogether, and either doing nothing to the ovary, or else taking out the worst part, and leaving the healthiest. This I began to do a little over eight years ago, and naturally when I have opened my mouth about it as a pioneer, I have run against a good many dissenters, and have had to take a good deal of buffeting; but when we get a résumé of a large amount of clinical material, such as has been presented to us to-night by a gentleman so competent to judge of it and to handle it, and have so complete a vindication of my tenets, even going a little farther than I have myself, it is to me a source of supreme satisfaction. Just as in surgery we have many conservative operations, short of amputation, available and successful for diseased bones and joints and crooked legs, so we have many conservative steps available between doing nothing and amputation for diseased ovaries. I am sorry to say, some gynecologists seem not quite to appreciate that fact. But to hold my ground against opposition, having in this country no one, except one gentleman in New York to side with me in this practice at first, it was necessary for me to keep well posted in regard to the histological examinations of such ovaries, that were made in Germany chiefly. One fact was then soon evident enough: that Nagel had preconceived notions on this subject which he tried to prove arbitrarily, by wrong ideas in pathology, bad logic and violent construction of other men's observations; and thought he could upset men like Hegar, Rokitansky, and others. But Nagel's voice was soon silenced and his claims disproven repeatedly and completely by the followers of these standard authorities, who carried out much more extensive investigations than Nagel did in this time. I presented a review of these researches before this society two years ago, because one of our members had incor-

rectly stated the facts about this subject, evidently because he did not know that the anatomical evidence on the subject was overwhelmingly against him.

The opinions of Virchow, Klob, Birch-Hirschfeld, Ziegler, and Orth, and others agree in the main with the more exhaustive researches of Rokitansky, Bulius, Bollenhager, Von Kahlden, and Pettipierre in this, that the great majority of these follicle cysts of from 1 to 1½ cm. in diameter do not contain healthy ova. This fact which is thus substantially established, is not shaken by the finding of a biased observer now and then who has seen something of an ovum in some such follicles, and then jumps to the wild conclusion that they are present in all of them. Nor has Nagel, who is living, made any sign of maintaining his erroneous views.

I must take exception to the remarks of my friend, Dr. Hentrotin, with regard to the results of conservative surgery upon ovaries. Once in a while a woman will come back with a bad ovary and I wish I had removed it, but where one such case comes back complaining, I have the satisfaction of knowing that 24 do not. There are certain rational medical measures, taking electricity and other agents into account, that we can use with effect for the treatment of these cases and make healthy women out of them, even if their ovaries grumble for a while after operation.

It has been correctly pointed out that the small cystic ovary is one of the minor lesions in gynecology. That is all we have ever contended. Some cystic ovaries do not cause any pain. Examine a woman for some other condition possibly, you will find she has a globular cystic ovary; you can palpate it and it does not hurt very much. Glandular cystomata (true neoplasms) of smaller size are very frequently painless. Do not tell the patient that she has such a thing. But nearly all of these follicular (inflammatory) cystic ovaries cause pain locally, or remote neuralgias or functional disorders of other organs.

In reference to the remarks made by Dr. Brown, I aim to get something of a common-sense demonstration that the ovary is the cause of certain specific pains which the woman describes; and there comes in the technic of careful examination. A gynecological examination, I have frequently said before students, begins at the head. We sometimes do better to use the ophthalmoscope and find out whether certain ocular disorders are due to organic lesions there, than to use the exploratory sound in the uterus in most of the minor gynecological cases. Next comes the mouth, chest, stomach, the gall ducts, liver, and, above all things, we should not forget the kidneys. I take all of these organs into view first, and the pelvis last. But the pelvis is perhaps the most difficult to examine; and I cannot sympathize with some of my professional brethren who speak so much of hysteria and have to fall back upon it so frequently. They too often ascribe persistent nervous disorders in women, to lack of will or hysteria. I do not find so many of such cases, and I must say, I have been as nearly

completely occupied with the disorders of women, as anyone in this city for the last ten years. I hold this: that the average doctor does too much guessing, as a rule, when he makes gynecological examinations. He often conveys the impression to women that these examinations are just as easily as "rolling off a log." But they are not. When I examine women I often hurt them, and they think I am rough, but when I talk to them, tell them what is necessary to do, they are willing to be hurt. Sometimes I send them home, with instructions to take physic, and to return in two days. I invariably catheterize them. I get them in proper position with proper assistance; flexing not merely the thighs, upon the abdomen, but also the abdomen upon itself somewhat, so as to relax the abdominal recti muscles. I have them understand something of the importance and nature of the information sought, which will largely decide the road to success or failure in treatment. Furthermore, the examiner must be ambidextrous and must develop the absolutely necessary tactile sense in his fingers, which requires as much and as constant practice as he would need to bestow upon a piano to be at least an amateur at that instrument. If we observe these rules in substance, and practice them, we can find things that are the cause of many of the hysterical phenomena that otherwise we would blame the woman for. We doctors sometimes forget that we are also imperfect creatures, with limited faculties. We need a microscope for many things in our art, and are far from having its assistance in our palpations, and bi-manual examinations. Nevertheless, what can careful bi-manual palpations show? A woman complains of pain in the loin; I am perplexed to know whether it is due to the kidney or to the ovaries or to something else on that side. I single out the ovary on that side, draw her attention to something else, possibly asking her something about her eyes, while I squeeze the ovary. She then exclaims that that excites the old pain in the loin. If she does not say so, I do not blame the ovary for the pain. I have gone so far in one case as to remove the very bad uterus and ovaries in a woman who complained of a disabling pain near the right kidney. She had for years had a stationary enlargement about that kidney, along with an even amount of pus in the urine. Palpation of the enlarged kidney was, strange to say, not very tender and did not excite her old pain there; but compression of the right ovary did excite it. And removal of that ovary, etc., removed the pain, and improved her health so much, that she did not mind the old pyonephrosis which remained as before; and removal of this, instead of the lower organs would undoubtedly not have relieved her pain nor given much other improvement.

The surgery for small cystic degeneration of the ovary, is chiefly incidental to the fulfilment of greater surgical indications upon the same or adjacent organs. It is associated very largely with curative procedures for complicated displacements of the uterus. Then with operations for tumors, infectious disease of

one or both tubes, appendectomy and operations for pathological cervixes, and vaginal lesions. I do not remember having to make abdominal sections merely to resect or remove such follicular cystic ovaries. I think I have nearly always found something else to do in those cases, that I regarded of more pathological dignity, like curing a retroversion that led to the disease in the ovary. But, even if nothing else existed, in a case, and I were assured after a trial of other remedies and sufficient observation, that such ovaries gave rise to the symptoms complained of, I would certainly operate upon them; because this condition gives rise to much more pain and functional disorders in other parts, than small ovarian tumors (neoplasm) do, that are quite devoid of pain when they are small.

As far as the results of this conservative and prophylactic surgical treatment of ovaries are concerned, I admit they are not ideal nor perfect. But they are certainly much nearer so, than doing nothing upon them or removing them. I am therefore very willing to do about one case in twenty-five over again—should I not be able to improve upon that—if I know that the remaining twenty-four retain not only their sexual functions more completely but are also made reasonably healthy, either with or without some rational local or general medical treatment, for a smaller number of them, after operation.

DR. EMIL RIES.—There are two sides to this question of cystic ovaries. One is the pathological side, and the other the clinical side, and the two ought to be correlated.

So far as the pathological side goes, it seems to me that some men are doing a lot of talking about clinical experience and about the pathology of some European authors who do not know very much about pathology themselves, and I say this advisedly.

I have here a specimen which Dr. Goldspohn removed, with the following remark: "Gentlemen, here we have the ovary which this man (pointing at me as I was sitting in the amphitheatre) says has nothing wrong with it. We will resect this ovary." I stepped down into the pit and asked the operator to let me have that piece of ovary he removed, which he did. I have here sections cut out of that piece of ovary. You can see the cyst under the microscope, it is a normal follicle, with normal ovum. Besides the small cyst, the rest of the tissue consists of corpus luteum, normal tissue. If the whole corpus luteum had been cut out, I might have thought the operator did not know what a corpus luteum looks like, and might have mistaken it for a tumor, but this piece does not contain a whole corpus luteum. He cut out a piece and left the rest in. Now it seems to me, that if this is diseased tissue it should be removed entirely, and if it is not, it should remain. The rest of the section shows more normal tissue. It contains, besides this one follicle, with normal, fully developed ovum, a number of primary follicles, and one normally developed Graafian follicle, and the rest is normal ovarian stroma. On the surface of the ovary is a little bit of adhesion which you

can easily see. I pass around the rest of this ovary, which I hold through the kindness of Dr. Goldspohn, and which I ask you to inspect. Anybody who wishes to have sections of it can be supplied, as we have made a hundred and fifty-nine so far.

Now, gentlemen, if a man, who stands up and pours out invectives against Nagel, says that he is a judge of pathological conditions, and then cuts out normal corpus luteum and normal follicles, and holds them up triumphantly to me, and says that this is what this man (referring to me) claims is normal, and that is what I (referring to himself) cut out, where is the logic?

Another thing: If these things are pathological; if this kind of tissue is diseased, do the gentlemen not know that the same kind of pathological tissue will grow in that ovary again? Does not the primary follicle continue to develop? Does not the growing Graafian follicle burst or become atresic? Considering the pathological and anatomical aspects of this specimen, I cannot see that there is any reason for mangling ovaries, cutting out normal tissue, sewing up the ovary, and then boasting that the patient recovered. Does that prove anything? It only proves that the operator has been aseptic. (Laughter.) He reports that these women become pregnant afterwards and bear children following such operations. To glorify that as a success in plastic surgery is a mistake. If you cut out a piece of a normal organ and leave the rest, I do not see why the rest should not have normal function. And this specimen here, for instance, is normal tissue, as can be easily demonstrated. Maybe that with increased experience and more time, the gentleman will be able to learn what a cystic ovary looks like, and what a normal corpus luteum looks like.

DR. GOLDSPOHN.—May I correct a statement of Dr. Ries?

PRESIDENT.—You may.

DR. GOLDSPOHN.—He said not the entire corpus luteum was removed. He means that the specimen which he picked up from the table was lacking in a part of its walls. This is properly so, for the remaining portions of the walls are afterwards very easily and completely picked out from the walls of the wound which would otherwise have to be unnecessarily large. Dr. Ries has not presented a sound basis for any argument.

Another thing: August Martin and the majority of other gynecologists who are such indeed, regard the fact as self-evident that a corpus luteum or a cystic Graafian follicle are positively pathological when they become as large in themselves as the remainder of the ovary, and that therefore they should be extirpated without quibble or question; and the men who have recorded more work than words on this subject have not found ova in such follicles either. If Dr. Ries found this specimen so very healthy, it is the exception; but he has not told us why the pain was afterwards gone, that had been proven to originate from that ovary. Furthermore, I know that by my rule of practice his patients and the patients of others will be relieved from suffering, while according

to his ideas they would either lose their organs or keep their pain.

(At this juncture Dr. Ries arose to reply to Dr. Goldspohn, when the President informed him that he had already consumed the time allotted by the Society. A motion was made by Dr. Gustav Koliischer, seconded and carried, that Dr. Ries' time be extended to discuss the matter further, leaving out personalities.)

DR. RIES (resuming).—If Dr. Goldspohn removed a little more tissue than was handed to me, and peeled out the rest of the corpus luteum, he simply confirms what I have previously said, namely, that he removed normal tissue. (Laughter.) A corpus luteum of the size of this one is within normal limits. A corpus luteum of the size of an ovary is not necessarily pathological, and if it is a corpus luteum of pregnancy, it is often larger than the rest of the ovary.

The worst thing that has been said to-night in favor of operating on cystic degeneration of the ovaries is the statement that we must never operate for that condition alone; we must only operate on these ovaries if the abdomen has been opened anyhow. Now, if the ovaries are to be regarded and treated as diseased when the belly is opened, why are they not diseased when the belly is closed? Either the ovary is diseased or it is not. If it is diseased, it necessitates operation, whether there are other pathological conditions or not.

On the other hand, Drs. Webster and Findley have removed thirty-nine ovaries, or pieces of ovaries, for this disease alone. They disagree with the wing of the party commanded by Dr. Goldspohn. I have very little chance of examining such ovaries. I have never operated simply with the diagnosis of cystic ovaries. It is true, I have removed ovaries in connection with ovarian abscesses, pus tubes, fibroids, and so on, and I see a good many of those that have small cysts, and I examine these cysts once in a while to see how they agree with small cystic degeneration. And what do I find? I find follicles, corpus luteum cysts, atresia folliculi, and sometimes follicles embedded in each other, just like a number of cups, one placed inside the other, with a little edema of the tissues and a little hemorrhage here and there. The latter may be due largely to handling in the course of operation. Sometimes I see cysts as large as a walnut, but I have never seen those cases of small cystic degeneration that make women so awfully sick. I have seen, however, such cases as Dr. Henrotin mentioned, who have been operated for small cystic degeneration, and who have afterwards gone to the other doctors, and I have been one of these other doctors. Of the 180 cases I have seen two uncured ones, one living in Chicago; I do not know who has seen the rest. I can give the doctor the names, if necessary.

Dr. Findley mentioned one thing which is very important: He has found remnants of inflammation in such ovaries. If there are foci of small, round cell infiltration; if there are distinct remnants of inflammation, and the ovary has been inflamed or is em-

bedded in adhesions, and has cysts, it is no longer a pure case of cystic degeneration. If we want to find out the truth about the importance of small cystic degeneration of the ovaries, we have got to have pure cases, cases in which there is no inflammation, but simply small cystic degenerations. Let us get such cases and find out what they show.

Hegar and his school and successors are still in the majority, and Nagel has not considered it necessary to repeat himself. He presented the microscopical findings of his cases, and that ended the matter for him. He can wait; I can, too.

Dr. J. CLARENCE WEBSTER.—For the last three months, in my spare evenings, I have been doing nothing else but examining ovaries in the non-pregnant state, in pregnancy, and in disease. The sections were prepared in my laboratory in Rush Medical College and amounted to nearly a hundred in number. From my study I am absolutely in agreement with the majority to whom Dr. Ries has just referred, and I am certain that there must be a difference of opinion in terminology between Dr. Ries and myself if he denies the existence of this pathological entity. When I speak of cystic ovaries, I am not referring to simple single cysts, nor to enlarged cysts of follicles; I am referring to the condition which is well described in A. Martin's work on diseases of the ovary. There are similar pictures in the book to those that have been passed around. According to the description in Martin's book, the process of cystic degeneration must be considered, so far as we now know, as associated with chronic inflammation, because various stages may be noted from the early congestion, exudate, edema, leucocyte infiltration, to the chronic condition in which the ovary is nothing but a mass of cysts between which lie sclerosed tissue, atrophied vessels, the number of Graafian follicles being greatly reduced in number.

I have studied the ovaries that Dr. Findley has been working at for the last year or two, and I am convinced from that study that the description, as given in Martin's work on the ovary, is absolutely correct. When we come, however, to the relationship of that condition to clinical phenomena, it is another situation, and one about which we do not know so much. My work has been to a considerable extent, experimental and I am still endeavoring to establish a knowledge of that relationship on a sound foundation. Though in the great majority of my cases the ovarian disease was associated with other pelvic lesions, I have operated on thirty cases in the last two years when no other discoverable lesion in the body was found. Why have I operated on these cases? Because these patients have been chronic invalids who have been subjected to all kinds of treatment without benefit, and because there was a marked indication that the ovaries were diseased.

Dr. Findley has referred to cases most of which were reported by my internes in the hospital; they were not prepared for any paper. It is interesting to note that in practically all of the cases

complaints referable to the pelvis were prominent, that in the great majority of cases neuroses were present of one or the other kind, and that nearly every case had been treated either by a general practitioner, by a neurologist or by myself from one to three or four years. One woman told me that she had spent fifteen thousand dollars in the last six years in rest cures, trips to Europe and to watering places. She was the richest one of the party. Others did not give such a history. (Laughter.) Several of them had been through the Weir Mitchell treatment.

With reference to this subject, I have in mind two suggestions. I am surprised at Dr. Sanger Brown's statement that he does not think there can be any special relationship between the pelvic organs and the rest of the body, or that he does not think the pelvic organs of a woman can be of any more importance in relation to neuroses than any other part of the body. Recent researches appear to show that the ovary does bear a very important relationship to body metabolism, as does the thyroid gland itself. We know that the recent work in relation to the corpus luteum is speculative but suggestive, and there is a great deal in the experiments to substantiate some of the speculations that have been advanced. We have been led by the work of the Italian, Curatulo, to believe that there is an important internal secretion produced by the ovary which is related to general metabolism. It seems to me, that in two directions we may look for an explanation of the clinical phenomena we find associated with this condition. (1) Is it not reasonable to suppose that in an ovary in which there is this expansion of cysts under resistance there might be various reflex disturbances in the body? (2) Is it not possible to suppose that the internal secretion of that ovary may be rendered pathological in some way, and so may affect one or other part of the body, or the entire body, just as we find that alterations in the secretion produced by the thyroid gland are related to disturbances though in another way?

In conclusion, I wish to state that I have performed resection and not complete removal in the great majority of cases. In several instances this procedure has been a failure and I have afterwards carried out complete removal or have advised that it be carried out because of return of the disease. This experience cannot be avoided because it is impossible to decide with the naked eye how much of the ovary should be resected. Nevertheless, I do not think that failure results in more than six per cent. of cases.

DR. GOLDSPOHN.—I do not think Dr. Webster understood me rightly, when I said I had not found cystic degeneration of the ovaries as an indication for operation. I have no doubt that there are pronounced cases of such degeneration, but in my experience there have been other conditions aside from that.

RUDOLPH W. HOLMES,
Editor of the Society.

TRANSACTIONS OF THE NEW YORK OBSTETRICAL SOCIETY.

Meeting of March 8, 1904.

The President, GEORGE W. JARMAN, M.D., in the Chair.

GYNATRESIA SIMULATING UTERUS BICORNIS; TUBERCULOUS SALPINGITIS; TUBERCULOUS PERITONITIS; ABDOMINAL HYSTERO-SALPINGO-OOPHORECTOMY.

DR. HERMANN J. BOLDT.—The patient, M. E. M., was entered at the Post-Graduate Hospital February 2, 1904. Her age was 23 years and she had been married five months. She had never been pregnant. Her family history was negative. She menstruated at the age of 15. For one year prior to the first appearance of the flow she had severe and almost constant pain in the lower abdomen, similar to that subsequently suffered at menstrual periods. The pain always increased in intensity for a few days every month. During her first menstrual year the flow occurred only three times, each of one week's duration and of small amount. The second menstrual year the flow took place thirteen times, each of from three to seven days' duration. Once it amounted to a severe hemorrhage, but even then the same intense cramp-like pain was present, and also much vomiting. After this the menses occurred at intervals of four weeks, small in amount and with excruciating pain. During the twentieth year a profuse metrorrhagia occurred of two months' duration. Since December, 1903, there had been intense abdominal pain especially in the right iliac fossa. Her bowels were constipated. The appearance of the patient showed her to be of slender build, anemic, and she looked very peaky. The external genitalia were infantile and the vaginal pouch was 3 cm. deep from the labia to its extreme end. On the left side of this pouch there was a small dimple to be felt, the size of a pin head. The pouch itself had been distended by coition. No uterus or any part thereof could be felt through this pouch. Recto-abdominal examination, however, revealed the small cervix uteri about 3 to 4 cms. above the end of the vaginal pouch. The entire uterus could be outlined by recto-abdominal examination. The main body was small and from its right side another small pear-shaped body was given off which proved to be an interstitial tubal affection of the right uterine horn. From this horn a greatly distended Fallopian tube was felt which was fluctuating and seemingly firmly adher-

ent. It was believed that this was an hematosalpinx caused by the gynatresic condition. The evidence of an existing appendicitis was plain and it was thought that the appendix was probably adherent to the Fallopian tube. The ovary on the left side was palpated close to the uterus, but the corresponding tube was not recognized. On operation it was found that a small sinus existed, having its exit on the left side of the pouch representing the vagina, and this barely passed a small probe, but it certainly was pervious with the cervical canal. The cutting part of the operation showed the intervening structure to be solid connective tissue, so that only the sinus mentioned was present. After making a sufficiently large artificial vagina, this was tightly packed with iodoform gauze, and then the abdomen was opened with the expectation of removing the supposed hemotosalpinx and the diseased appendix vermiformis. On section about 24 cc. of sanguino-serous fluid escaped. The omentum was found to be adherent and likewise firm adhesions of the intestines. After separating the omentum the parietal and intestinal peritoneum in the lower abdomen and pelvis were found to be studded with tubercles, and they were largest and closest over the bladder. The separation of the adhesions in the pelvis was difficult and caused much oozing. The right Fallopian tube gave exit to about 30 cc. of pus during the course of its enucleation. The ovary was found to be cystic and enlarged to about four times its normal size. On the left side the ovary was found close to the uterus as diagnosed, but the tube was drawn upward and was doubled upon itself. The appendix was likewise very much thickened and firmly adherent. It was a typical tuberculous appendicitis. The walls of the Fallopian tubes were so much hypertrophied that it at once became clear why the distended right tube did not rupture during the process of manipulation and enucleation. Under existing circumstances I deemed it advisable to remove the entire pelvic organs, the uterus and its adnexa. It was strange that through such small sinus as existed the menstrual function could continue without causing very decided pathological conditions from distention by blood dammed back. It was, in his opinion, also clear that the tubercular salpingitis was primary. That the appendix was next involved before the peritoneum was elsewhere markedly affected was apparent because the appendix was much more affected than other parts of the intestine. That the peritonitis was secondary to the salpingitis was manifested by the peritoneum not being universally affected, but only the lower part of the umbilicus, and the most intense affection was near the Fallopian tubes.

TUBERCULAR SALPINGITIS.

DR. W. S. BANDLER.—This is the pathological report of Dr. Boldt's case. The uterus is slightly larger than the normal and has a well-developed muscular wall. The cervix is of normal appearance with well-marked *arbor vitae*. The external os shows

microscopically well marked erosions and the glands evidence the characteristics of a cervical catarrh, forming numerous cysts lined with high cylindrical epithelium and containing cell-detritus and secretion. The glandular change is so marked that a picture like that of cervical polyp results. There is round-celled infiltration, but at no point is it nodular in grouping nor are epithelioids or giant cells present. The uterine lining is normal in appearance with no irregularities or roughenings. Microscopically the glands are normal, with a slight predominance above the usual of the interstitial cells. No inflammatory changes are to be noted. The right cornu is considerably larger than the left, being both thicker and higher, thus giving the uterus the outward appearance of a *uterus bicornis*. This change is due to an isthmic and interstitial alteration about the tube and its coverings, producing an exaggerated form of salpingitis isthmica nodosa. On the upper surface of the right cornu is a portion of the "pyogenic membrane" of an abscess cavity. On microscopical examination the membrane is found to be composed of round-celled inflammatory new tissue, but with no characteristic specific features. The right tube is dilated in a nodular manner at several points, its outer end being nearly the thickness of the thumb. Cross sections at this point present the following characteristics: The muscularis is thickened, the muscle fibres and bundles being hypertrophied and the vessels greatly dilated. The peritoneal coat evidences adhesions at certain points as well as areas of newly formed inflammatory tissue. Numerous areas of inflammatory nature are noted. The invasion is most marked toward the mucosa and speaks for the extension of an inflammatory change from within. The boundary between muscularis and former mucosa is irregular and almost obliterated by the saw-like extension of the mucosa inflammation toward the periphery of the tubal wall. The mucosa evidences no folds nor any surface epithelium. Its whole thickness is made up of a dense mass of round and epithelioid cells, in which are scattered isolated islands of so-called "glands," which represent the remnants of the old epithelium. This changed mucosa, now forming a thick lining altered by and formed of inflammatory products and products of degeneration, does not present an even appearance. It contains numerous areas of pus and cheesy degeneration, other areas of altered connective tissue, and, what is more distinctive, numerous round spots which stain intensely and which lie around and among the cheesily degenerated portions. These spots are composed of large epithelioid cells, and in their centre are frequently found very large polynuclear or giant cells. These minute tubercles make it evident that we are concerned with a tubercular salpingitis. The tubal canal contains pus and cell detritus.

The appendix shows a canal whose mucosa is in a state of active secretion with all the evidences of a hyperplastic growth. Lymphoid elements and follicles are present in decided amount. The separation between muscularis and mucosa is well defined.

The muscularis evidences edematous infiltration and a well-marked invasion by round cells, most marked near the periphery. Toward the peritoneum the muscularis is studied with isolated discrete tubercles composed of a periphery of round cells, a centre of epithelioid cells, and in the latter, as a rule, a very large giant cell. These tubercles lie very near and against the peritoneal coat, which is covered with inflammatory exudate and adhesions.

Conclusions: The appendix evidences an involvement of a tubercular nature from without inward at a relatively early stage. The tube shows an involvement occurring in the reverse order, that is, from within outward. While the appendix is in the stage of tubercle the tube is in the stage of cheesy degeneration and pus formation, representing, therefore, an older condition.

DR. A. PALMER DUDLEY.—There was a point in the doctor's report that attracted my attention because I have a knowledge of tubercular infections, not only of the lungs, but of the peritoneal cavity. The doctor, in his pathological report, brought up the question of atresia of the vagina associated with tuberculosis. I believe, gentlemen, that it is a well founded fact that we seldom see tuberculosis of the peritoneum and genitalia not associated with tuberculosis of the lungs unless it is of local origin. I know of more than one case in which tuberculosis has been transmitted through the system from the lungs to the genitalia, and I also know of many cases of tuberculosis where women have borne children while they were in the last stages of consumption and the genital tract was not atresic. In the discussion of such a paper it would seem as if we should exclude atresia of the vagina from tuberculous disease unless the parts are injured. So far as removing the uterus and appendages is concerned, it is a question whether we are justified in doing surgical work to that extent in tubercular processes. I question that, although I know that in the past I have performed such operations for tubercular conditions. But I cannot see that it is essential. If we have a bicornate uterus to deal with that is another thing. If one horn of the uterus is diseased and the other is healthy that again brings up another question. I believe it rests entirely with the operator as to what course should be pursued in these cases. From the pathological report given to-night it seems that this was a case of tuberculosis with an apparent bicornate uterus; this latter proved to be otherwise, yet there was the tuberculosis infection. What will be the result when she recovers from the operation? Gentlemen, we must look into the future. Can we say that we have removed *all* the tubercle bacilli from her? I do not think so. This is a point that I believe we should be very careful about and not let it get to the public without due and careful consideration.

DR. HERMANN J. BOLDT.—Regarding the tuberculosis specimen which simulated a uterus bicornis I would have taken the organs out even if I had not mistaken the uterus to be malformed. The tubercular process had extended into the horn of the uterus and rendered that organ a source of danger.

ACUTE BILATERAL PURULENT SALPINGO-OOPHORITIS. DIFFUSE PERITONITIS. ABDOMINAL HYSTERO-SALPINGO-OOPHORECTOMY. APPENDECTOMY.

DR. HERMANN J. BOLDT.—The patient 27 years old; had two children, the last four years ago; both deliveries were normal. She had one abortion at the fourth month nine months ago. Menses began at the age of 17, and were regular at intervals of four weeks, of two days' duration, and scant in quantity. There was no dysmenorrhea. On January 30 the patient menstruated only from 6 A. M. to 3 P. M., and although there was no dysmenorrhea, an intense headache began two hours after the cessation of the flow. The temperature was said to be elevated to 104 F. at that time. Soon afterwards the patient had severe cramp-like pains in the right iliac fossa which radiated towards the umbilicus. A week later she again began to lose some blood per vaginam. On February 22 a pelvic abscess was opened, but the patient did not improve, suffering much pain in the lower abdomen, more intense in the iliac fossa, especially the left. Members of her family maintain that she had been ailing since the birth of her last child, although the present acute illness had been of only a little more than one month in duration. The woman appeared very feeble, greatly emaciated, with accelerated pulse; temperature, 101.8. The abdomen was flat, but sensitive to even light pressure in its left lower part. The rest of the abdomen did not seem particularly sensitive. On bimanual examination it was readily diagnosed that in addition to the abscess which had been opened, a pelvic peritonitis existed, and a pyosalpinx on the left side. On examination under ether it was determined that instead of one Fallopian tube being seriously affected, both were probably purulent and adherent. On opening the abdomen it was found that an extensive purulent peritonitis was present. On separating the coils of intestines so as to get at the pelvic organs, a number of sero-purulent accumulations were opened. The intestinal adhesions were not disturbed in the upper part of the abdomen. On the right side, independent of the abscess which had previously been opened, was another abscess containing about 30 c.c. of thin pus. This probably had leaked out of the right Fallopian tube, its walls being made up of coils of intestines. That the tube and ovary were very adherent and in a state of acute inflammation was obvious. A similar condition existed on the opposite side. The safest course to pursue under the circumstances undoubtedly was to do a pan-hysterectomy so as to provide for the escape of the secretions which necessarily would take place from such large, torn injured surfaces which, too, had been contaminated by pus. A strip of gauze was loosely placed over the torn surface of the pelvis and the end carried into the vagina. The anterior peritoneum attached to the bladder was then attached to the posterior surface of the pelvis, thus practically making the true pelvis extra-peritoneal. This course is invariably pursued by me in in-

stances where great complications from adhesions exist, and the results are most satisfactory. I have seen the most desperate cases make smooth recoveries by following this technique. While I am opposed to drainage, such conditions, in my opinion, call for it. The features of interest in this particular case are, first, the existence of a diffuse purulent peritonitis with so comparatively slight manifestations of such a serious condition. Second, what is the cause of the illness? There is absolutely no clue to be gained by reviewing the history. Undoubtedly the woman had had tubo-ovarian disease, perhaps dating from the time of her last confinement, but no reason for the acute exacerbation could be found. It might be added that if the exact condition could be diagnosed beforehand, that no part of the adnexa could with hope for success be saved, the better, or rather safer operation, would be to do a radical operation from below. In this particular instance the appendix was also found inflamed and strictured in its distal third, consequently removed. It is not probable, however, that the leaving of the appendix would have given rise to serious trouble for the patient, but as long as the abdomen is open it is my almost invariable custom to remove it.

DR. J. RIDDLE GOFFE.—I believe in what has been asserted regarding cases of sepsis. Make the operative procedure as simple as possible—do whatever is absolutely necessary, but nothing more. Refrain from a pan-hysterectomy for the purpose of drainage if drainage through the posterior fornix will afford the necessary relief.

There was one point in reference to Dr. Boldt's description of drainage that I should like to speak of. He spoke of suturing the peritoneum of the bladder to the posterior wall of the pelvis and then simply introduce gauze and fill the pelvis below. Now cases of purulent peritonitis need drainage from the general peritoneal cavity, and if you shut off the general peritoneal cavity by sutures that object is absolutely defeated. Dr. Boldt, on general principles, is opposed to drainage; he thought it necessary in this case, and yet prevented all possibility of drainage by suture of the peritoneum. On the contrary, I use iodoform gauze for drainage in almost all cases in which I open into the pelvic cavity through the vagina, and I use it freely. There is no better means of draining this cavity than by the use of iodoform gauze. It stimulates the outflow of the serum throughout the whole extent of the peritoneum. For twenty-four to thirty-six hours there is a free discharge of serum and the most reasonable explanation seems to be that it comes from stimulation by the iodoform in the gauze, and that, too, from an extremely wide surface. If I had a case similar to the one reported I would wish to have the iodoform gauze come in contact with the peritoneum and very freely so. I do not fear adhesions of raw surfaces. I find, as a rule, that adhesions, unless the product of sepsis, disappear quite rapidly, and I get no unpleasant results from them.

DR. A. PALMER DUDLEY.—In such a case as reported I believe

that drainage should be instituted, but not by glass tubes. Dr. Goffe has struck the key-note when he speaks of using dry iodoform gauze. Do not use moist drainage. I have seen five cases of iodoform poisoning from the use of iodoform gauze made moist by glycerine, and each patient had to be placed in a straight-jacket. Dry iodoform gauze will act well as a drain, and I use it in every case as reported and also in cases of appendicitis. If there is a pus sac I carry the iodoform gauze down through the vagina and so make a double drainage.

DR. BOLDT.—With regard to leaving in the uterus when we remove the adnexa and open the vagina and drain, I believe that drainage would be better with the uterus out than with it in. We have a larger opening and have freer drainage, and the uterus being absolutely useless under such circumstances could well be taken out. Regarding the amount of time consumed I think its removal would take but very little longer, if any, than when we resected the Fallopian tubes. I believe I can take out the entire organ as quickly as I could properly resect the tube. Therefore, I think it is better to remove the entire organ if we have conditions as were cited in this particular instance.

What Dr. Goffe has said regarding shutting off the general peritoneal cavity holds good in some cases. No one rule can be followed, the individual conditions must be considered for one to form an opinion and act as his judgment deems best. Posture is an important factor. The head of the bed should be invariably elevated in order to facilitate drainage.

EXTENSIVE ABDOMINAL WOUND SUPPURATION, FROM AN OVER-LOOKED FURUNCLE.

DR. HERMANN J. BOLDT.—An abdominal pan-hysterectomy had been done by me on February 24. When the dressings were changed for the first time I was astonished to find that there was an extensive suppuration of the wound, something which I had not encountered for about eight months. Careful investigation for the cause elicited the fact that the patient had a small abscess in the median line directly over the symphysis. This had been thoroughly cleaned during preparation for operation, and at the time of operation it was not noticed by me, and my assistant failed to tell me about it. My incision went directly through the furuncle, hence the infection. The suppurative process was very intense and had extended beneath the fascia. In such conditions enzymol a gastric juice preparation, gives me satisfactory results in bringing about cessation of suppuration sooner than any other preparation or chemical product that I have used. Another feature of interest in this case was, that about twelve hours after operation, the woman up to that time being in a fair condition, suddenly showed signs of collapse, to such a degree that my assistant and the nurse in charge thought she would die before my arrival. I saw her within half an hour after the setting in of the serious symptoms, and fortunately the

intravenous infusion which was at once made soon caused a rally so that with the exception of the suppuration she is convalescing.

MALIGNANT PAPILLOMA OF EACH OVARY.

DR. HOWARD C. TAYLOR.—I operated in June, 1900, that is three years and nine months ago, on a woman 50 years old, for malignant papilloma of each ovary, doing a complete abdominal hysterectomy. The tumor on the right side was three inches in diameter and situated high above the uterus. The tumor on the left side was from three to four inches in diameter and located in the cul-de-sac of Douglas. There was free fluid in the peritoneal cavity, and after the operation more or less of the growth was left on the peritoneum. No large pieces, but the multiple implantations often seen in these cases.

I did not see the patient again until one week ago, when she came to my office at my request. Subjectively she was well, no pain, no discomfort, weight 148 pounds, a gain of 40 pounds since leaving the hospital, had no signs of any malignant trouble. On examination I found a cyst filling the lower abdomen up to the umbilicus. I advised operation, which I performed three days ago, removing three cysts. The largest was six inches in diameter, adherent to the top of the vagina and to the peritoneum over the rectum. The upper part was entirely free. Beneath this cyst was a smaller one, about two inches in diameter in the cul-de-sac of Douglas, and at the side of this was still another small one. There was also a nodule in the omentum. There was no pedicle in any of the cysts. The patient's course to the present is satisfactory. A microscopical examination of the cyst proved the diagnosis of papilloma.

DR. HOWARD C. TAYLOR read a paper on

PERITONEAL DRAINAGE.¹

DR. GEORGE T. HARRISON.—The paper I consider to be a very interesting and important one, and I am prepared to agree with the conclusions arrived at entirely. I think that most of us in our experiences in the evolution of this subject find that we are more and more discarding the use of the drain. I believe that in operations by which the peritoneal cavity is exposed by the abdominal route that one of the greatest improvements in modern methods consists in the employment of the Trendelenberg position which renders the intestines less liable to be injured. As the doctor has so truly told us and tried to impress upon us, and with great ability, too, the delicate endothelium of the peritoneum, if intact, can well take care of itself. After all, I believe the idea of drainage is a snare and a delusion. When we use Mikulicz dressing it is really not a drain but a tampon. The great object of this tampon has been to prevent the spread of and limit the area of infection, and should be used especially in cases of injured viscus where

¹See original article, page 721.

there may be danger of escaping contents from the intestines of bladder. He uses it in gangrenous appendix cases. But in all cases in which it is used the word drainage does not describe the method, and we should get rid of the idea that it does. This idea is vicious and leads men to wrong methods of treatment. After all, there is no necessity for drainage in the true sense; the great object is to limit the area of infection and prevent its extension to the healthy peritoneum. A man must be very credulous if he believes that, in cases of septic peritonitis, he can limit it by opening and draining the abdominal cavity. One of the best surgeons in Germany said that the only way to treat successfully a septic peritonitis was to treat it as one would a phlegmon of the leg. The only feasible thing to do is to make a free opening and leave it open, and that is very true. Now, therefore, if you perform an operation and remove the adnexa, take out a pyosalpinx; suppose you do have some escape of material or fluid into the abdominal cavity, if it is not a recent case the pus contains no virulent germs. If any of you gentlemen believe that you can prevent the spread of a septic peritonitis by the introduction of a drain your experience does not agree with mine.

DR. HIRAM N. VINEBERG.—This subject has been pretty well thrashed out, but I think that now almost all of us adopt the same practice as outlined in the paper. I believe the doctor could have added greatly to the value of the paper if he had given the statistics from 1893 up to the present time and compared them, for after all that is the only way to determine in any procedure as to its value. By following up the practice of one surgeon in one hospital would enable us to obtain valuable statistics. We all talk as if we knew just what the peritoneum was capable of doing but it seems to me that we frequently learn, and often by sad experiences, that we do not know what the peritoneum will do. We may operate with every care and know that there is no pus in the abdomen, have taken the greatest care in our technique, and yet the patient may develop a peritonitis, a peritonitis more rapid in its course than any we know would occur from pathological processes and which would prove fatal in forty-eight hours or less. I believe we are overconfident in what we think we know about the peritoneum.

DR. J. RIDDLE GOFFE.—As most of you know, I do the large part of my pelvic work through the vagina and, in all cases of hysterectomy or of suppuration or sepsis, I drain. In the simpler cases of anterior section I open the cul-de-sac for drainage. If I do an hysterectomy, especially if there is extensive disease of the appendages, or extensive adhesions, I pack the pelvis full of iodoform gauze, lifting the intestines and omentum out of the pelvis. This gauze is prepared by taking 10 per cent. iodoform gauze and soaking it in a solution of bichloride of mercury, 1/500, for weeks and months. Just previous to operation I take the amount required from the jar and I soak it in a dish of hot sterile water until ready for use. When needed it is swashed

around in the water thus getting rid of a large quantity of iodoform and bichloride and it is then wrung out as dry as possible. Sometimes a second quantity of water is used, as hot as can be borne. This gauze is used for packing and drainage in all cases. This gauze is not cut into small pieces but used in long strips one-half the commercial width and two or three feet in length. I have used it for many years and I have left it in cavities of necrotic tissue for six, eight, ten, twelve and even fourteen days and it came out as sweet as when introduced. The gauze is, as a rule, left in the pelvis for four days without being interfered with and for thirty-six hours the discharge of serum is very profuse. I believe that the amount of serum that comes away in thirty-six hours that it must come from the peritoneal surfaces remote from the points of contact with the gauze. At the end of twenty-four or thirty-six hours the discharge of serum ceases and plastic exudate is thrown out over all the surfaces in contact with the gauze thus shutting off the general peritoneal cavity. About the fourth day after the operation I begin to withdraw the gauze, removing all that comes away easily. When resistance is offered, due to adhesions of the gauze to surrounding tissue, I cut it off at the vulva and tuck in the remaining end, giving a vaginal douche of boric acid solution twice a day. Every day the gauze is pulled out and cut off. The gauze by its capillary attraction carries up the fluid which dissolves the adhesions at the points of contact. I cut off that which protrudes and continue with the boric acid douches until the gauze has been entirely removed. By the time the end of the gauze is reached I find the intestines beginning to be movable and, in the course of a few weeks, sometimes months, in ragged cases the intestines become freely movable. That is practically the process of after treatment in vaginal work. In anterior vaginal section I do not always drain. But if there has been any pus, or evidences of an old septic infection, I open the cul-de-sac, pack it full of gauze and treat as already described. This packing is not only for purposes of drainage but also to make sure against any oozing, or hemorrhage, and I pack it in firmly. In cases of hysterectomy the gauze is carried above the stumps, so that the gauze comes in contact with the peritoneum. Now some object to this method on the ground that leaving a large opening in the vagina tends to prolapse of intestines or vaginal hernia. I have never seen such an accident, neither have I had omentum come down. As the gauze descends the vagina hugs it all the time until, at the end, the opening is practically closed. I have never had occasion to regret treating cases in this way. When there is present any condition that requires special drainage I elevate the head of the bed, *i.e.*, place the patient in the Fowler position, which is of great advantage.

DR. R. H. WYLIE.—I should like to speak of two points only. In using gauze I think we do get free drainage for a short while varying from thirty-six hours on. In using the drain I think it should be fluted and then pulled upon to relieve the tension about

the opening. There is an accumulation of serum about the opening and by pulling a little bit on the gauze it relieves that tension and sometimes you will find where there has been a slight rise in the temperature, the temperature will come down by pulling upon the gauze and relieving the tension and allowing the accumulated serum to come away. Instead of taking it out and replacing it I pull upon it each day, removing portions of it only. Another point the doctor forgot to refer to, or else he does not believe in, is that pertaining to draining the peritoneal cavity in cases of tubercular peritonitis which is associated with a great deal of fluid in the abdominal cavity. Or, again, in those cases in which we operate for papillomatous cysts and shortly after find a reaccumulation of fluid in the cavity. I believe there is still a field for drainage here, especially for the glass drain. I use it myself and my brother uses the glass tubes made with only openings as small as $1/16$ of an inch in diameter; these are placed in the abdominal cavity and left there to drain for weeks. As a matter of fact I have never seen a single case of infection following their use. It may be the outflow of serum prevents the infection; the process is allowed to go on and these patients may live a long time and some cases are even cured by this method of procedure.

DR. JOSEPH E. JANVRIN.—It is well known that a large part of my work during the past twenty years has been in the line of vaginal hysterectomies, particularly for cancer. Dr. Goffe has described my method, one that I have used for twenty years, for preparing the gauze. I soak a 10 per cent. iodoform gauze in bichloride solution, and then in hot water for a few minutes and then before using it squeeze all of the liquid out of it. But I would like to say that I never *pack* gauze tightly in the pelvic cavity; I do not believe in *packing* it in any cavity because I believe it interferes with drainage. I simply take strips of gauze and lay them in just sufficient to hold up the intestines and omentum and nothing more, and it takes a very small amount of gauze to do this. Simply as a protection to the intestines and to cover raw surfaces I place the gauze in the lower pelvic cavity and the upper part of the vagina, and that gives free drainage for twenty-four or forty-eight hours.

I do not do as the doctor does in removing the gauze. I allow it to remain for one week. I may remove a small portion of it on the fourth or fifth day if the gauze is low down in the vagina. I believe manipulation is unnecessary. The gauze is placed there simply as a protection, as above stated, and, if applied that way, it becomes loosened gradually and, at the end of the eighth or ninth day, sometimes as early as the seventh, with a little bit of pulling it comes out without any trouble whatever. It will drop down itself and really needs no force to be applied.

Regarding the glass tubes Dr. Wylie refers to, I suppose they are the same old glass tubes we were accustomed to use twenty-five or thirty years ago, placed in the abdomen at the lower portion of the incision. I certainly used them twenty-five or thirty-

five years ago. Those tubes I consider to be dangerous, first, because they often become plugged up by the exudate that is thrown out around them and cease to draw, and there have been instances in which the intestines have been sucked into the openings and become injured. I discarded their use years ago. For the past twenty years I have never used anything but gauze drainage applied in the manner just described.

DR. W. G. WYLIE.—The tubes Dr. Jarvin just referred to in his remarks are different from those used by me. We use glass tubes entirely in tubercular diseases because we find by our experience in a large number of cases that we can take cases apparently hopeless and cure them for a time, if not completely, by doing what seems so important, *i.e.*, instituting continuous drainage. These tubes are small, egg-shaped or elliptical, and are placed at the bottom of the cavity; they have a flange at the neck to prevent them slipping in and they can be kept in place for weeks and weeks. In some forms of myxomatous tissue apparently malignant these tubes may aid greatly in the recovery of the patient. Using this continuous drainage will give results that cannot be had otherwise. This same applies in tubercular disease. For instance, take a case—a case that was sent to Bellevue Hospital that had been in three or four of our prominent hospitals and which was considered to be hopeless. There was a large sloughing bladder, with an opening into the bladder which communicated with another opening in the perineum, with a perforation in the intestines. Take such a case as this and institute continuous drainage, mechanical in nature, and you will be surprised to see what it will do. If you attempt to drain such cases uphill you will find it is almost impossible. Take many cases that have been drained from above and that have died, those same cases might have recovered had drainage been made from below. I have succeeded in opening posteriorly, behind the uterus, in cases that I considered to be hopeless and which I did not expect to save, and yet by employing this, gentlemen, I believe tuberculosis that is local in other places than the lungs is curable usually. Drainage has been used by us in extraordinary cases with the best of results. Take, for instance, cases supposed to be incurable, of seven or eight years' standing, that come to me where I may remove cystic tumors and make persistent drainage; these cases I can relieve by so doing, getting mechanical drainage. The drain must be perfect; most drains are mechanically imperfect. The effect of gravity and intra-abdominal pressure aids in not leaving a puddle. I have in mind one of the first cases operated on in the Woman's Hospital, part of a tumor being removed, the rest being left on account of adhesions. This patient then went home with the drainage in and it remained there a year or more. The wound kept on draining from the walls of the remnant. Soon she became very much run down and weak and then consulted a general surgeon in Toronto who attempted to curette the cavity, which we all consider a very foolish thing to do. He then placed in a long soft

tube, 10 inches in length, and made of thin rubber. After some time this disappeared and was lost in the cavity. The drainage was kept up but the surgeon failed to find the tube. Fecal matter was discharged through the wound. The woman then came back to New York and was examined again in the Woman's Hospital by several surgeons and then referred to me. Dr. Spencer and her family physician were in the hospital at the time and recognized her. What I undertook to do was to get thorough drainage below, opening up freely regardless of the opening in the intestine. I succeeded in doing this by using two probes. One was introduced anterior to the uterus, between it and the bladder, and an opening was made with the finger, reaching down into its lowest part and getting into the cavity by pushing the probe through. This opening was then dilated and a double tube was then pulled through, so making continuous drainage. In some weeks the thing completely closed. Soon the upper opening through the abdominal wall was shut and drain was from below, until it entirely ceased. It was a good result. The woman is now nursing, following her occupation. More is gained by drainage in such a class of cases than by anything else. I believe I was in the Woman's Hospital when drainage was first taken up. To-day there are two classes of men, one which decries drainage and say that it should not be used, and the other which advocates it. I believe drainage should always be employed in every case where you expect to get an accumulation of blood or where there are evidences of sepsis. If trouble is expected from an accumulation of septic fluid or from continuous oozing from torn adhesions I prefer to drain.

TRANSACTIONS OF THE WASHINGTON OBSTETRICAL AND GYNECOLOGICAL SOCIETY.

Meeting of February 19, 1904.

DR. W. P. CARR presented an essay on

THE RELATION OF THE ALIMENTARY TRACT TO PELVIC DISEASES.¹

DR. SPRIGG.—A number of micro-organisms get into the blood by way of the alimentary tract and produce lesions in other parts of the body without producing lesions of the intestines. Koch, at a recent meeting in London, state that the tubercle bacillus did not gain entrance into the body without producing lesions in the intestines. This has been disproved. He cited experiments made in dogs to whom the Tubercle bacillus was fed—6 to 8 of the experiments gave positive results. Recently, Dr. Ravenel, bacteriologist to the Pennsylvania Live Stock Society made experiments on 10 dogs. He starved and purged the dogs and then

¹See original article, page 779.

gave them the bacilli in starch. The cultures were administered through a stomach tube. After a few hours he injected the chyle from the dogs into guinea-pigs and got positive results in a large percentage of the cases. Many other organisms are absorbed lower in the intestinal tract, and it is possible that lesions of the genital tract can be produced by them. This would suggest that many of the lesions of the pelvis may be due to bacteria absorbed from the intestinal tract.

DR. COOK.—It is too much the tendency of the surgeon to pay attention to local lesions alone. The large majority of diseases do originate through ill-nutrition due to bad digestion and assimilation.

DR. BALLOCK.—Why, if a large percentage of pelvic diseases in women are due to bacteria from the intestine, do not the same troubles occur in males?

DR. MILLER.—A great many of the symptoms which women complain of are due to faulty digestion and a poor nutrition. However, we never see a case of actual inflammation of the uterus or appendages which can be attributed directly to a gastro-intestinal catarrh. The largest percentage of inflammatory conditions of the pelvic organs are due to the gonococcus, the next largest to the puerperal infections (chiefly the streptococcus), the third to the Tubercle bacillus. The gonococcus almost invariably gain entrance through the vagina, uterus, etc. The same can be said in the great majority of cases of puerperal infections, and a certain number perhaps of tuberculous infections. Practically the only ways by which a gastro-intestinal catarrh can cause an infection of the female genitals is by so lowering nutrition and the powers of resistance of the woman that she is more prone to tuberculosis. Tumors, pelvic abscess, etc., may be invaded from the alimentary tract by becoming adherent to the intestine and producing lesions of its wall; ulcerative conditions of the bowels, appendicitis, etc., may lead to pelvic abscesses by actual perforation of the bowel; suppuration in blood clots, tumors, etc., have occurred occasionally through the circulation, but to state that a large percentage of the inflammatory conditions of the uterus and its appendages are due to a gastro-intestinal catarrh cannot stand criticism.

DR. CARR.—The difference of opinion between Dr. Miller and myself is due to a difference in our ideas of inflammation. He meant mild chronic uterine catarrh. The majority of these cases are due to a catarrh of the alimentary tract. Almost any woman with chronic gastric catarrh will have uterine catarrh where an increased amount of mucus is secreted. The increased secretion of mucus will make a diagnosis of uterine catarrh. Catarrh does not necessarily mean inflammation in a histological sense. More women come to him complaining of leucorrhœa than any other one thing, and he finds that they have, as a rule, gastric catarrh. When acute infections occur, if the patient is in a well-nourished condition her resistance is much greater than when she is poorly

nourished. Good, healthy epithelium will not absorb the products of indigestion, while unhealthy cells will. In reply to Dr. Ballcock, I would say that pelvic inflammations do occur in men. Rectal disease is not as common in men as in women. I have opened numerous abscesses in the pelves of men due to rectal and anal disease. If men had tubes and ovaries they would have been diseased. There is no doubt but that the depressed condition in patients due to a poor indigestion invites infection. It predisposes to tuberculosis of the pelvic organs. The reason that the streptococcus and the staphylococcus infections do not occur oftener is that they are preceded by other less harmful bacteria and they do not thrive when these are present. Dr. Cook got the gist of the paper. All chronic diseases are more or less influenced by bad digestion.

REVIEWS.

PRACTICAL GYNECOLOGY. By E. E. MONTGOMERY, M.D., LL.D., Professor of Gynecology, Jefferson Medical College, Gynecologist to the Jefferson Medical College and St. Joseph's Hospitals, Consulting Gynecologist to the Philadelphia Lying-in Charity and the Kensington Hospital for Women. A comprehensive text-book for students and physicians. Second Revised Edition, pp. 900. Philadelphia: P. Blakiston's Son & Co., 1903.

This is a revision of another text-book "for students and physicians" and a satisfactory one, but far more satisfactory for the physician than for the student. It has a distinctive cover, excellent paper and clear type. The illustrations are numerous, 539 in all, and add greatly to the clearness of the text and are largely original for this work. The text shows the great ability of the author in describing conditions so that they will be easily and clearly understood. His arrangement of the subject matter is unusual and open to possible criticism. He has arranged together the malformations of all pelvic organs, then all the inflammations, then all the new growths, etc., instead of the more usual one of taking each organ separately and describing under it the malformations, the inflammations, the new growths, etc., to which it is liable. To the practitioner, who has his own classification more or less definitely formulated, this is a matter of small importance. For the student, to whom classification is of the utmost importance, the author's plan does not seem as desirable as the other. Again the author divides the subject matter into 654 sections and not into definite numbered chapters and by so doing neglects to emphasize sufficiently for the student some subjects. For example, an excellent description of ectopic pregnancy of 38 pages is under the general heading of "Genito-urinary Hemorrhage and Ectopic Gestation." A subject of so great importance is entitled to a chapter of its own. In places clearness has been sacrificed

for completeness. Under lacerations of the pelvic floor we find no less than thirteen different denudations, some only slight and unimportant modifications of others, and as many different methods of suturing.

The first two hundred pages are devoted to the usual description of instruments, methods of examination, anatomy, physiology and malformations. Under traumatisms we find the injuries of all the pelvic organs, including lacerations of the cervix and perineum, injuries to ureter, fistulæ, etc. The illustrations are excellent and add greatly to the value of the text. Instead of the usual expression "Displacements" of the pelvic organs, the author heads the subject "Deviations of the Pelvic Organs," though frequently in the text he uses the more common term of displacement. The arrangement of the subject matter of this sub-division is most confusing. Prolapse of the uterus is separated from retroversion of the uterus by a description of conditions not having the close clinical relationship that these two conditions have. Again, the treatment of retroversion is separated from the description of the condition by subject matter entirely foreign to it. In the summary at the end of the description of a number of operations for retro-displacements of the uterus the operation devised by Ferguson and Gilliam seems to be most favored.

Under the section Genital Tumors are included the tumors of all the genito-urinary organs. Hernias of the vulva are described under the unusual subsection of gaseous cysts.

In the treatment of fibroid tumors of the uterus requiring the removal of the uterus a complete hysterectomy is preferred to a supravaginal hysterectomy "for the retention of the cervix affords no special advantage. Its complete removal does not add to the difficulty nor prolong the operation. It affords better drainage and expedites the recovery of the patient."

In comparing abdominal and vaginal hysterectomy for carcinoma of the uterus, the preference is given to the former "not because it permits us to extirpate the lymphatic glands, but because it enables the operator with greater safety to remove the parametrial tissue."

T.

THE CLOSURE OF LAPAROTOMY WOUNDS AS PRACTISED IN GERMANY AND AUSTRIA. By WALTER H. SWAFFIELD, F.R.C.S. Ed., M.D.Ed. London: J. & A. Churchill, 1904.

This monograph is composed of extracts of letters from fifty-five surgeons and gynecologists of Germany and Austria giving their methods of closing laparotomy wounds. It is difficult to make any classifications of the methods used, as there are so many modifications. In general, suturing in layers is more commonly used than the through-and-through method, forty-four using the former to eleven the latter. Many who suture in layers reinforce the layer sutures with some through-and-through sutures. Apparently more non-absorbable material is buried than in America. Prof. Witzel of Bonn buries one and sometimes two layers

of silver wire sutures, and reports—"for the past five years this method has been applied under my supervision to over 2,000 laparotomies—not one abdominal hernia."

It would have been of interest if the location of the incisions (whether in the linea alba or through the rectus) and the nature of the dressing used were described in the various letters. T.

ORTHMANN'S HANDBOOK OF GYNECOLOGICAL PATHOLOGY, for Practitioners and Students. Translated by C. HUBERT ROBERTS, M.D.Lond., F.R.C.S.Eng., M.R.C.P. Physician to the Samaritan Hospital, London; Physician to Out-Patients Queen Charlotte's Lying-in Hospital, London, etc. Pp. 127. London: John Bale Sons & Danielson, Ltd., 1904.

This is a translation of Orthmann's *Vademecum für Histopathologische Untersuchungen in der Gynäkologie*. Everyone working in gynecology appreciates the small space given in books on general pathology to the pathology of the female genital organs and will welcome every special work on this subject. As is necessary in a book of this size, covering the entire subject of gynecological pathology, the descriptions are brief and concise. As little space as possible is given to the more uncommon diseases, leaving more room for conditions met with more frequently. Even with this arrangement the descriptions are not as comprehensive as are found in many text-books on gynecology, and are entirely too brief to be of great value to the specialist.

SURGICAL DISEASES OF THE ABDOMEN, WITH SPECIAL REFERENCE TO DIAGNOSIS. By RICHARD DOUGLAS, M.D., formerly Professor of Gynecology and Abdominal Surgery, Vanderbilt University, Nashville; ex-President of the Southern Surgical and Gynecological Association, etc. Pp. 883. Philadelphia: P. Blakiston's Son & Co., 1903.

The absence of many illustrations is striking. There are only twenty in all; these are full-page plates, several are diagrammatic localizations of conditions described. Treatment is briefly outlined, operative technique entirely omitted. This leaves the greater part of the work to be devoted to description of the morbid conditions themselves, the nature and causes of which are based on accurate and recent pathological and bacteriological knowledge. At the end of each chapter is a comprehensive bibliography.

Peritonitis is the first disease described. The etiology, bacteriology and pathology of the disease is treated in a thoroughly scientific manner. The classifications of varieties from pathological and from clinical standpoints are exceptionally clear and comprehensible. More details regarding the author's method of treating the various forms would have been interesting. Under appendicitis we find some unusual terms used. "Endoappendicitis" and "intratubular appendicitis" do not mean any more than the usual

terms and their use only clouds the description. The influence of micro-organisms in the causation of gall-stones is fully explained. The author considers bacteria the causative agent in their formation, but holds that some other irritation or altered circulation must be present as a predisposing cause. He favors the mode of infection through the blood-supply rather than by ascension from the duodenum. Regarding the origin of uterine myomata, the author "concludes that myomata grown from embryonic foci in the walls of the uterus which residua are frequently found in immediate relation with small arteries; and these congenital foci are awakened into activity by conditions disturbing the circulation." This statement is probably as nearly correct as any that can be made at the present time as to the origin of fibro-myomata of the uterus. That these foci are of embryonic origin and not of more recent formation is impossible to prove. Carcinoma of the uterus is omitted entirely from the work. T.

BRIEF OF CURRENT LITERATURE.

OBSTETRICS.

Mercurial Poisoning by Post-partum Intra-uterine Douches.—Boissart and Coudert (*Bull. de la Soc. d'Obst. de Paris*, No. 8, 1903) call attention to the danger of using toxic douches for the arrest of post-partum hemorrhage. In the case reported there was a rise of temperature on the ninth day after labor, and a hot douche of two litres of 1:8000 bichloride was followed by one of two litres of boiled water. Next day the uterus was curetted and a hot douche of two litres of 1:8000 bichloride was given, then one of three litres of sterile water. Bleeding continued, and the uterus was packed. A few hours later there were dysenteric stools with tenesmus, vomiting and anuria; subsequently mercurial stomatitis developed. Recovery. The points emphasized are: the rapidity of onset of toxic symptoms; the weakness of the bichloride solution, the persistence of anuria for five days. The writers urge the importance of care in giving intra-uterine douches. When uterine contraction occurs during the administration of such a douche so that the cervix contracts upon the nozzle, and prevents the return flow, the douche-bag should be lowered at once, to avoid entrance of its contents into the uterine sinuses. In women weakened by hemorrhage or other cause, the blood pressure is low and this accident is more liable to occur. In such cases it is safer to use boiled water only.

Question of Decidua Formation in Phosphorus Poisoning.—Overlach has described the formation of a decidua in a case of phosphorus poisoning in a supposedly non-pregnant woman, and accordingly held that decidual cells are not characteristic of pregnancy. F. Hitschmann and O. F. Lindenthal (*Arch. für Gyn.*, Bd. 69, H. 3) have examined the uteri of nine women dying from

phosphorus poisoning in whom the existence of pregnancy was excluded, and found that none of these bore out Overlach's contention.

Post-partum Hematometra.—M. G. Fieux (*Ann. de Gyn. et d'Obst.*, Nov., 1903) puts on record a rare sequel of labor. The forceps delivery was very difficult and the head of the still-born child showed marks of intense traumatism. Extensive laceration of the cervix and vagina were noticed at the time. For five or six days fetid débris was expelled; but the general condition of the mother remained good. On the tenth day the lochial flow ceased suddenly. Forty days after labor the woman had severe pain in the loins and lower abdomen for two weeks. The next two months amenorrhea persisted and the pains increased. Three and a half months after labor the pain had become constant and intense. Examination showed the uterus distended as at three and a half months of pregnancy and the external os completely obliterated by a cicatrix. The next day, while at stool, there was a sudden discharge of dark syrupy blood and clots. Ten days later, slight pain in the loins; no cervical opening could be found. A few days after this pain and dark bloody discharge returned. Even a small probe could not pass through the small cervical opening from which the flow came, so the cervix was incised at that point and the opening was subsequently enlarged with sounds and a permanent intra-uterine stem-pessary. Menstruation has since been uneventful. The pelvis was of flat rachitic type. With this condition and the cicatricial cervix the writer would try forceps in event of subsequent dystocia, and failure in this, would do Cæsarean section.

Puerperal Eclampsia.—H. Oliphant Nicholson (*Jour. Obst. and Gyn. Br. Emp.*, Jan.) in the treatment of puerperal eclampsia advises the administration of a primary injection of morphine followed by large doses of thyroid extract. Thirty or forty grains may be given at first and a second dose of twenty grains may be required in six or eight hours if there is no evidence of improvement. The object is to produce symptoms of thyroid intoxication as rapidly as possible. Thyroid substance is an ideal vasodilatory and by acting in this manner allows the kidney to perform its function as well as the skin. He reports a case successfully treated in this manner.

Paul Bar (*L'Obstét.*, July, 1903) has studied the liver and kidneys in seventeen children borne by eclamptic women. The lesions discovered were congestion, hemorrhage and fatty degeneration, none of which are pathognomonic.

Early Diagnosis of Ectopic Pregnancy.—G. Eustache (*Jour. des Sci. Méd. de Lille*, No. 31, 1903) insists upon the importance of early diagnosis of ectopic gestation, a condition which he thinks is much more common than is now realized. Such a diagnosis is based upon a history of suppression or delay of one or two menstrual periods, signs of early pregnancy, previous uterine or para-uterine disease; upon the occurrence of pelvic pains

that there is nothing, as far as a study of the coagulability of the blood goes, to support the contention that the thrombi found in certain organs in fatal cases of eclampsia are due to an increased coagulability in these cases. Albuminurics in pregnancy, on the other hand, have a shorter coagulation time.

A Warning Sign of Danger to the Child During Labor.—Frederic E. Daniel (*Br. Med. Jour.*, Mch. 26) believes, that during the second stage of labor in an instrumental case with the head presenting, there are certain movements made by the child which are indicative of grave danger to its life. These movements are transmitted through the instruments. The movement is an indication of a pressing desire on the part of the child to breathe, and can only be brought about by interruption of the free circulation through the umbilical cord. It is distinctly characteristic of an inspiratory effort. When this movement is felt delivery should be terminated as speedily as possible.

Treatment of Puerperal Infection.—Richard C. Norris (*Amer. Med.*, Feb. 13) in discussing the prevention of puerperal infection lays stress on three important details: (1) The antepartum toilet of the patient; (2) hand sterilization and the dangers of vaginal examination; (3) the immediate repair of injuries to the birth canal. The antepartum douche in normal cases is contraindicated. When the vaginal secretions are abnormal or there is a suspicion of gonorrhea the vagina should be scrubbed with soap and water, alcohol and mercurial chloride solution. It has been shown that the perineum, vulva and labial folds in the majority of healthy cases contain pathogenic microorganisms and it is this area only that we should attempt to sterilize routinely. On account of the difficulty in rendering this area sterile vaginal examinations should be reduced to the least possible number. Rubber gloves are especially valuable to the general practitioner; these should be carefully sterilized and kept in mercuric chloride solution between examinations. Linear tears of the vagina and perineum should be repaired. The question of immediate repair of cervical lacerations not producing severe hemorrhage and of other injuries requiring a formal operation at this time is debatable. Any abnormal puerperal condition must be considered as due to infection until proved otherwise. Having made an early diagnosis of infection, the infected area, which is usually within the uterus, should be explored by the finger to determine further if possible whether we have to deal with putrid absorption from decomposed débris or the smooth endometrium of septic infection. When the uterus contains débris it should be removed by a sharp curet at the earliest possible moment. This operation should not be classed as a minor operation. For putrid endometritis a disinfecting douche is indicated. When as rarely happens we find the uterus empty neither curet nor douche are indicated. Curettage should almost never be repeated and repeated douching will be required very rarely. Salpingitis that progresses to abscess formation requires evacuation and drainage by the va-

gina in favorable cases, others by the abdomen. General peritonitis rapidly developing requires operation within the first or second day of the appearance of grave symptoms. Hysterectomy for puerperal infection is as yet an unsettled question. The constitutional or general treatment of puerperal infection consists mainly of an easily digested diet and free stimulation. An ice coil to the abdomen and free use of subcutaneous or rectal injections of saline solution are of distinct value.

Peter Horrocks (*Br. Med. Jour.*, Feb. 13) believes there is too much interference with the normal course of labor, too much douching and examining of the parturient woman and that as yet the majority of medical men do not realize that the sterilization of the hands should be as elaborate as if they were to perform an abdominal operation. The writer allows no douching either before or after labor. In nearly all cases an examination is all that is needed. When septicemia exists and is seen during the fourth or fifth day it is probable that a thorough curettage is advisable accompanied by an antiseptic douche, and a stimulative general treatment. Where sapraemia exists clean out the uterus with the finger and give an antiseptic douche. A physician treating a septic case should not at the same time continue midwifery.

Vesicular Mole.—Thomas Slater Jones (*Br. Med. Jour.*, Feb. 13) cites a case of vesicular mole occurring in a woman forty-eight years old who had had eight children, the last one two years ago. This child was syphilitic. The mole was removed and found to weigh five pounds and four ounces. There was no definite growth like deciduoma malignum. The patient recovered.

GYNECOLOGY.

Treatment of Uterine and Vaginal Malpositions.—J. Pfannenstiel (*Monatschr. für Geb. u. Gyn.*, Bd. xviii., H. 2) says that an uncomplicated retroflexion does not cause local symptoms and does not demand local treatment. If symptoms are present treatment should be directed to complications such as chronic pelvic peritonitis. The same symptoms may occur in pelvic peritonitis with a normally placed uterus, or the uterus may be bound down by extensive adhesions due to pelvic peritonitis yet with no symptoms. Liberation of the adherent uterus under narcosis is to be condemned, as it does not aid the underlying inflammatory process and may damage the intestines. Chronic pelvic peritonitis should be treated by massage baths and hot injections. If these fail to relax adhesions and relieve the symptoms laparotomy is indicated. The diseased appendages should be removed to whatever extent is necessary, and the uterus freed and fixed in ante-position. The writer has done 144 ventrofixations with one death. For this operation he advocates the transverse suprapubic incision. The same procedure is sometimes called for in cases of retroflexion without adhesions but complicated with marked prolapse of the ovaries or chronic oophoritis. In six per cent. of the

writer's cases there was recurrence of the retroflexion after this operation. In cases of retroflexion complicated with descent and prolapse of the vagina there are always symptoms, but these are due to the vaginal condition and treatment of the latter by means of pessaries is indicated. If these fail or if there is prolapse of the vagina he advises vagino-fixation and colporrhaphy, as ventro-fixation and Alexander's operation give no sure results. In women no longer able to bear children the bladder is pushed completely over the back of the uterus and the latter is fastened into the connective tissue between the vagina and bladder, "firm vagino-fixation." In women capable of child-bearing the vesical peritoneum is freely separated before opening the vesico-uterine fold, and before tying the fixation sutures is again placed between the uterus and vagina, "loose vagino-fixation," which allows the uterus to enlarge during pregnancy. Two silkworm gut fixation sutures are left in place four to six weeks. The writer's statistics include 140 firm and 121 loose fixations. Of 86 which were followed, 93 per cent. were permanently successful as regards retroflexion, 89.6 per cent. in respect to the vaginal relaxation. Retroflexion recurred in 7.4 per cent. of the firm fixations, and in 12.5 per cent. of the loose. The author has had no disturbance of labor after ventral or vaginal fixation.

Fibromyoma of the Intra-Abdominal Portion of the Round Ligament.—Herbert R. Spencer (*Jour. Obst. and Gyn. Br. Emp.*, Feb.) after considering the facts furnished by fourteen cases concludes that fibroids in this situation occur usually in women over forty. The tumors are most frequently on the right side. They may occur in virgins; they do not prevent pregnancy or cause abortion, nor do they influence menstruation, menorrhagia or dysmenorrhea. The tumors are subject to lymphangiectasis and to myxomatous and calcareous degeneration and may cause trouble after the menopause. They vary in size and may be pedunculated or sessile, intra-peritoneal or sub-peritoneal. The tumors which vary in consistence, closely simulate ovarian, uterine and broad ligament growths. They should be removed as soon as they cause symptoms or attain a considerable size. The author reports a case of an intra-abdominal fibro-myoma of the round ligament weighing six pounds removed from a virgin twenty-four years old, who remains well after five years.

Treatment by Incision of Dysmenorrhea and Sterility Due to Stenosis of the Cervix. Bedford Fenwick (*Br. Gyn. Jour.*, Feb.) after cleansing the vagina and cervix dilates the cervical canal up to No. 16 or 16½ by graduated metal sounds. then an incision is made on each side from half to three-quarters of an inch. A small needle threaded with catgut is passed through the left side of the anterior lip close to the upper angle of the incision, and then across and through the corresponding point on the right side, a similar stitch is inserted midway between this and the tip of the cervix. These two stitches are tied with the result that the two edges of the anterior lip are drawn inward together,

the raw surface being closed completely while the posterior lip is left flat. Wool plugs are applied to stop hemorrhage; these are removed in sixteen hours when the posterior lip will be found glazed. In about a week it is covered with mucous membrane. The sutures holding the anterior lip become softened and allow the edges of the lip to separate, these also become covered with mucous membrane. The stitches are removed at the tenth day and the two lips fall together but can not grow together as the two opposing surfaces are covered by mucous membrane. This operation gives a widely patent cervical canal. The lips after six to nine months retract so that they may become as small as an ordinary cervical lip. The writer claims that this operation gives relief from pain in 90 per cent. of cases and cures sterility in 50 per cent.

Proliferating Papillomatous Ovarian Cysts.—E. Stanmore Bishop (*Clin. Jour.*, Mch. 9) discusses papillomatous cysts arising from the paroophoron drawing particular attention to their rapid growth, appearance and treatment. These cysts beyond their quicker growth and the usually concomitant presence of free fluid in the peritoneal cavity, both of which are not invariable, give no symptoms which will differentiate them before operation from others which spring from the oophoron.

Nearly always when the abdomen is opened a large amount of clear amber colored mucoid fluid escapes; even when this has been emptied we do not see the bare cyst. If the cyst is seen at all its color is dull gray with small ridges or tufts of red cock's-comb-like growth springing from it. The cyst is generally adherent to the surrounding parts.

These cysts often perforate and unlike other cysts they open out and often turn completely inside out so that we only see the interior. There is a tendency for the secondary growths to disappear after the removal of the primary cyst.

To remove the cyst free it from all adhesions and ligate its pedicle; cover the raw extremity of the pedicle with peritoneum. All secondary growth of any size should be removed. Smaller masses are left untouched as are the villous surfaces on the intestines. The peritoneum is cleansed as far as possible and the abdomen closed.

Predisposing and Pre-Cancerous Conditions of the Breast.—Henry T. Butlin (*Clin. Jour.*, Mch. 6) believes there are three causes which predispose to cancer: (1) Innocent tumors; (2) duct cysts, and (3) chronic mastitis with or without the presence of cysts.

Innocent tumors should not be left indefinitely as there are sufficient cases on record to show that they are not harmless.

Of duct cysts it may certainly be said that they are a source of danger and that they should be removed while they are small and when an operation is trivial in extent.

Chronic mastitis is probably by far the most common predisposing cause of cancer of the breast. It is much more liable to occur in women at or near the climacteric period but it may

occur at any period of adult age. In making a diagnosis of this condition we find that the indurations are more often multiple than cancers are; that they are more frequently associated with perceptible cysts; that they are much more likely to affect both breasts; that they are much more painful than cancer in an early stage. Dimpling of the skin probably never occurs in this condition but the axillary glands are often enlarged. The enlargement is often limited to a single palpable gland, which is not fixed and is at most but firm, not hard. The relation between chronic mastitis and cancer has long been known to surgeons. This condition when occurring in young women or older women when of recent occurrence, may be treated by strapping. Tumors which are probably due to chronic mastitis but exhibit doubtful signs should be incised without delay to determine their real nature.

Tumors which are not cured or very decidedly improved in six weeks by treatment should be removed.

Repair of Lacerations of the Cervix.—Robert L. Dickinson (*N. Y. Med. Jour.*, Mch. 26) finds it advisable to suture cervical injuries at the close of labor when they seem to be the cause of post partum hemorrhage; to sew up all cervical tears in the first week in conjunction with the perineal operation when the pelvic floor injury is of such a character that a few days' delay is desirable, and to restore severe injuries to the cervix from the third to the tenth day after delivery.

Tuberculosis of the Urinary System in Women.—Guy L. Hunner (*S. H. H. Bul.*, Jan.) feels justified in drawing the following conclusions from thirty-five cases of tuberculosis of the urinary system in women: (1) Urinary tuberculosis in women is a disease of early adult age. (2) It is usually primary in the kidney, although about half of the patients complain of bladder symptoms. (3) It is confined to one side in the vast majority of cases. If involving both sides a very painstaking examination must be made of the separate urines to determine whether the treatment should be surgical or medical. (4) The disease should be kept in mind in dealing with any symptoms referable to the urinary tract; even such common occurrences as a supposed movable kidney or incontinence of urine should be carefully investigated. (5) Appendicitis and gall-stone colic must be differentiated. Any obscure or atypical case of supposed malaria or typhoid fever should remind one of this disease. (6) The disease is compatible with a long life of comparative health, and macroscopical and microscopical examination of our specimens shows that in some cases there is a tendency to spontaneous healing; but in spite of these two facts the disease is pre-eminently surgical.

Fibroid Tumors.—J. Macpherson Lawrie (*Br. Med. Jour.*, Feb. 13) reports five successful hysterectomies performed for fibroids upon five sisters. In this family there were nine sisters, five of whom had fibroids and five cataracts. He believes coinci-

dence of these two diseases sufficiently suggestive to invite further investigation.

Ovaro-Hysterectomy.—T. H. Sweeny (*Br. Med. Jour.*, Feb. 13) reports twelve cases of marked pelvic contraction, complicating labor, upon which it was necessary to perform ovaro-hysterectomy to save the life of the mother and child. Of these nine mothers were saved and eleven children. The writer asserts that over one in every thousand pregnant women in India dies in consequence of contracted pelvis. This contraction in more than half the cases is the result of osteomalacia and the remainder are caused by rachitis. Ovaro-hysterectomy was performed upon the above mentioned cases as most of them were cases of osteomalacia and had been under the care of native midwives and therefore the danger of sepsis was very great.

Chronic Endometritis and Chronic Metritis in Virgins.—Archibald Donald (*N. of Eng. Obst. & Gyn. Soc.*, Jan.) divides endometritis and metritis of virgins into three groups. The first and largest is characterized by a small cervix, an acute flexion and by enlargement of the body of the uterus. The cervix resembles the infantile type. In the second group the cervix is normal but the body of the uterus is heavy and there is retroversion or exaggerated anteversion. The third group is characterized by marked erosion and hypertrophy of the cervix apart from the changes in the body of the uterus. Of the symptoms pain or a dragging sensation in one or both iliac regions or pain generally in the lower part of the abdomen was most frequent. Dysmenorrhea was next most frequent. Leucorrhœa was noted in thirty-two out of forty cases. Menorrhagia and metrorrhagia occurred in 16 out of 40 cases.

The treatment of this condition consists of a thorough curettage. W. E. Fothergill examined the scrapings from several cases of this idiopathic endometritis and found in some cases a marked increase of interglandular tissue. In other cases there was a general hypertrophy of all elements while in some the interglandular tissue was more fibrous than normal. There was no marked change in the vessels.

The Ovum and Graafian Follicle in Pre-Menstrual Life.—Thos. G. Stevens (*Jour. Obst. and Gyn. Br. Emp.*, Jan.) finds that the Graafian follicles and ova in pre-menstrual life mature by a constant well marked series of changes. The ovum never reaches the same size as that of an adult female. The size of the correspondingly mature Graafian follicle is variable, but usually measures .8—1 mm. in diameter.

The ovum is removed by a kind of phagocytosis as a rule, but may undergo simple necrobiosis. The phagocytic agents are the cells of the membrana granulosa. The follicle eventually contracts by means of granulation tissue formed in its fibrous tissue, which eventually absorbs the remains of the membrana granulosa and liquor follicles.

Hypertrophy of the Fetal Thyroid.—W. E. Fothergill (*Jour.*

Obst. and Gyn. Br. Emp., Jan.) reports a case of hypertrophy of the fetal thyroid following the administration of chlorate of potassium to the mother during pregnancy. The mother had previously aborted on several occasions and the potassium chlorate was given to prolong the pregnancy, which it did, the child being born at full term, but with a greatly enlarged thyroid which caused its death shortly after birth. The mother had puerperal eclampsia and was given thyroid substance with apparently good results.

The hypertrophy of the fetal thyroid may have been due to a toxic state of the maternal blood not prevented by the potassium chlorate as it may have been due directly to changes in the maternal blood caused by the potassium chlorate.

Metrorrhagia.—W. K. Walls (*Jour. Obst. and Gyn. Br. Emp.*, Jan.) cites a case of severe metrorrhagia occurring in a girl fourteen years old. Upon examination the cervix was found large and flabby and the uterus anteфлекed. Curettage was performed. The scrapings showed a great amount of inter-glandular small-celled infiltration. The glands were for the most part small. There was no great increase of the vessels. The writer believes this belongs to the class of "idiopathic endometritis," described by Dr. Donald. At the present time eight months after operation the periods are normal.

DISEASES OF CHILDREN.

Mental Deficiency in Children.—(*British Journal of Children's Diseases*, March, 1904.) G. E. Shuttleworth sets forth some of the leading characteristics of typical groups of mentally defective children, their relations to diagnosis and prognosis, remarks upon etiology and pathology and submits suggestions as to treatment and training. The term mental deficiency includes the departures from the normal mental development of the child which are included in the terms idiocy, imbecility and feeble-mindedness. Amentia is the inclusive scientific term indicating a generic difference between minus conditions of mind dating from birth, and the degenerative processes of dementia in later life; while insanity, which causes a perversion of developed mental faculties, though it may occur in childhood, stands in an entirely different category. The larger number of cases of amentia date from a period anterior to birth. This statement is at variance with what most parents are willing to admit, for they are naturally reluctant to recognize any tendency in themselves to the production of defective offspring.

The primary division of cases of mental defect in children into 1. The congenital or primary class. 2. The non-congenital, acquired or secondary class requires, therefore, to be made with discrimination and caution.

The so-called congenital class of cases really consists of two groups (a) those due to causes acting prior to birth; (b) those due to causes acting at birth. Regarding the first group we must

consider the important subject of heredity. In the most recent investigations—those of Dr. A. F. Tredgold—of the family history of 150 defective children in the pauper asylums of the county of London—it was found that in 90 per cent. some adverse hereditary influence could be traced. An examination of case books with regard to 2,380 children under the care of Dr. Fletcher Beach and the writer at Darenth and the Royal Albert Asylum gave the following factors (in many instances concurrent) as present in the family histories: Phthisical family history 28.31 per cent. Hereditary mental weakness (insanity, imbecility, etc.), 21.38 per cent. Epilepsy, or other marked neurosis 20.00 per cent. Intemperance in parents (alcoholic) 16.38 per cent. Consanguinity in parents or grandparents 4.20 per cent. Syphilis, commonly supposed to be a frequent cause of degeneracy in offspring, figured only in 1.17 per cent. of cases in which there were stigmata of inherited syphilis, or parental syphilis had been ascertained, but parents do not readily admit such a cause and many syphilitic children die before attaining the age of institution treatment. In the second group, those due to causes acting at birth, we find in the same statistics: Premature birth 3.52 per cent. Difficult birth 17.55 per cent. Instrumental delivery is recorded in 3.31 per cent, and asphyxia neonatorum in 12.96 per cent. In 20.67 per cent. the imbecile was the firstborn of a family. In 0.96 per cent. one of twins. In passing we note that our statistics show that judicious forceps delivery is less harmful as regards mental impairment in the child, than is unassisted, unduly prolonged labor.

The non-congenital or acquired class is much less than parents would have us believe. The more one sees of the histories of patients and their families the stronger becomes the conviction that the accident, the illness, or the shock to which the mental defect is attributed, is but an incident in most cases. From the statistics already quoted we give the following: Eclampsia (infantile convulsions) 27.39 per cent.; epilepsy (Darenth statistics) 11.52 per cent.; infantile, etc., paralyses 0.92 per cent.; traumatis (injury to head) 6.17 per cent.; fright or shock (mental) 3.06 per cent.; sunstroke 0.54 per cent.; febrile illnesses with brain complications (meningitis, atrophy, etc.), 5.96 per cent. Over-pressure at school was an assigned cause in only 0.16 per cent. of the 2,380 cases.

Broadly, we may divide all mentally defective into two large classes (1) those with under-acting nervous systems—the dull and apathetic; (2) those with over-acting nervous systems—the nervous and excitable. In the former class (*e.g.*, in the cretin) $\frac{1}{4}$ nerve-centre reaction-time is slow; in the latter, nerve is unduly irritable, tending to explosiveness and ill-controlled. Highly neurotic and epileptic cases are instances. Want of power of sustaining attention is the common psychical characteristic of both classes. In the first it depends upon defect of energy; in the second, upon defect of inhibitory power.

In many of the mentally defective may be found the so-called stigmata of degeneration, puny growth, ill-proportioned features,

out-standing pointed ears, deformed jaws and palates, hare lip and traces of persistent fetal structures, such as epicanthic folds. Congenital heart disease, with patulous foramen ovale, is not uncommon. Faults in form and finish of the skull and sometimes of the integumentary structures are present. Associated are defects of mental action, lack of "taking notice" in early infancy, and of speaking at the usual age—which gradually arouse anxiety; and in neurotic cases there is much irregular or ill-regulated muscular movement. There are certain types which can be separated by distinctive physical features. The first is the microcephalic, the diminutive and imperfectly shaped head testifies to arrest of development. Contrasting with this is the distended skull of the hydrocephalic type, some cases of which are of intra-uterine origin. But the most remarkable of all the types is that designated Mongolian. In this the skull is a short oval flattened posteriorly. The palpebral fissures are often obliquely set and of almond shape; the nose is squat, flat at the bridge with distended cartilages. The hands are often as broad as long, the fingers being stumpy. There are tegumentary defects. The tongue, which is large, is marked with transverse fissures and presents hypertrophied papillæ. Adenoids are frequent. Children of this type seem more liable to cardiac imperfections; in fact the whole bodily structure points to lack of finish. Another type is that of sporadic cretinism, or myxedematous idiocy. If not absolutely of primary origin its symptoms develop so early in life that it may be classed as congenital.

One typical class of cases occurring in childhood and youth, though comparatively rare, is of great pathological interest, those of recent years included under the title of juvenile paralysis, though described as long ago as 1883 by Dr. Judson Bury under the more exact name of hereditary syphilitic dementia. In these cases endarteritis seems to lead to cortical sclerosis and atrophy of brain cells. Though the typical stigmata of inherited syphilis are not always found, the family history will generally show the probable existence of such a taint. This is usually progressive and terminates fatally in four or five years after its onset. A baby who does not take notice at the usual time and seems to have no desire to hold up its head or to use its hands or feet, is, if not incapable on account of physical debility, usually mentally defective. As the time for walking and talking goes by without any effort to use its limbs and speak, the case becomes obvious and the prognosis will depend upon the degree and depth of the incapacity. Family history—neurotic inheritance—will help us. If, however, the size of the head be notably small—say at six months 15 inches instead of 17—and the form characteristic we diagnose microcephaly and may prognose fair development of sensorial and muscular powers, but little concentration of thought and a mental capacity limited by defective development of the brain. In hydrocephalic cases, if active mischief have subsided, though the child is backward in walking and talking, and may be subject to

fits, the degree of mental impairment may not be very marked, and considerable improvement may result under suitable training. Mongolian imbeciles are sometimes confounded with cretins, but are more vivacious, their skin is not a loose investment as in cretinism, and they have more or less obliquely placed palpebral fissures (which cretins have not), and Mongols have frequently a well marked epicanthic fold. Cretins have no thyroid gland, but sometimes fatty tumors in the posterior triangles of the neck. Both have large tongues, often protruding, but typical Mongolian tongues are transversely fissured, the cretin tongue is simply coarse. The cretin head is larger than the Mongolian. Mentally the Mongolian is fairly responsive. The cretin (untreated) has been compared to "a toad like caricature of humanity," responding very slowly, if at all, and functionally inactive. As regards prognosis, the Mongol will be capable of some amount of instruction by imitation; the cretin of none, until subjected to the thyroid treatment, when he will progress more rapidly than the other.

Treatment, though it must be largely individual, should not be solitary, and social good qualities are best prompted by instruction with other similar children. Improve by all known methods the physical conditions of the patient, removing all obstacles to brain activity that are removable. Errors of refraction and audition must be remedied and adenoids removed. Exercise and discipline the muscular system, cultivate the senses methodically, regulate personal habits, encourage continuity of attention by attractive occupations, such as those of the kindergarten. The lessons should be mainly objective; mere exercises of memory without understanding are worse than useless. All engaged in the training of such a child must know how to obtain the confidence of the little patient, and to be successful such work must be a labor of love. A mentally deficient child is usually more easily and judiciously dealt with outside of his own home, where there is often unconsciously a prejudicial reaction on the part of the parents, however well intentioned.

Rickets.—(*The Dublin Journal of Medical Science.*) W. Langford Symes says that clinically there is no difficulty in recognizing rickets; but pathologically the following bone diseases must not be confounded with it:

1. Fetal Rickets, Intrauterine Rickets, Antenatal Rickets, Congenital Rickets.—Here the child is born apparently rickety, and the want of ossification of bones is extreme. There are usually fractures, stunted growth, the cranial bones may be so inadequately formed that, as in a very extreme case, the head almost resembled a bladder. This condition is, however, one of extreme rarity.

2. Achondroplasia; Chondro-dystrophia Fetalis (sometimes spoken of as fetal cretinism); Dwarfs.—In achondroplasia, the deformity, which is extreme, is due to dwindling and arrest of development of the shafts of the long bones. The limbs are consequently remarkably shortened and stunted. The condition per-

sists through life if the child survive, though many such dwarfs are stillborn or die soon after birth. The intelligence is unaffected, and hence they differ from cretinism as well as from rickets.

3. Osteomalacia or Mollities Ossium really has no resemblance to Rickets.—We here have to deal with progressive decalcification and softening of bone which has already full grown. It has no connection with rickets, but attacks the fully formed skeleton and produces fearful deformities. It occurs sometimes during pregnancy when the deformities of the pelvis may be extreme and present insuperable barriers to parturition. Multiple fractures also occur in the long bones (*fragilitas ossium*), which break with the greatest ease.

4. Osteoporosis, or "Pseudo-Rickets," is a condition of extreme sponginess or porousness of the bones, produced by a rarefying osteitis, thus differing from rickets. In osteoporosis the hard basement substance of the previously formed bone is absorbed and replaced by cellular and fibrillar tissue.

5. Congenital Syphilis.—Of course it is possible and not uncommon to have both present. Congenital syphilis is known by snuffles, usually a rash on buttocks, a history of premature births or miscarriages in prior conceptions, or the early deaths of previous new-born children. *Craniotabes* is commonly present; frequently an enlarged spleen. So called syphilitic rickets is merely rickets grafted on to a previously syphilitic infant.

6. Splenic Anemia of Infants, or "Battersby's Disease," may possibly simulate rickets; with this rickets is commonly present also and the anemia, blood changes, hemorrhages, and edema are sufficiently characteristic to stamp the accompanying enlargement of the spleen and rickets with peculiar association.

The duration of rickets depends on the stage at which it is discovered and the efficiency of treatment. If unnoticed it commences at three or four months, and persists, if the child survives, till by the third year the bones are deformed and the disease is incurable. If observed early and properly treated it can be completely arrested, and will terminate in perfect health. Watch must be kept to prevent its return. If untreated it terminates often in early death from some complication of the chest or nervous system. If the child survives, deformity will result from the bone disease.

Rickets become indirectly one of the most potent causes of death in young children. The rickety child is deprived of its chance when it has bronchitis or broncho-pneumonia; gastro-intestinal troubles and chronic diarrhea are powerful factors in aggravating the disease and many cases are swept away in hot weather by an acute intestinal infection. The treatment of rickets is thus summed up:

1. Animal food. 2. Fresh air and baths. 3. Tonics.

1. The substitution of a vegetarian for an animal diet will produce rickets. Although defective sanitation aggravates the

disease some of the worst cases may be seen in the castles of the rich. Eliminate at once starchy and vegetable foods from the diet and substitute fresh suitable animal food. The milk must be of suitable fatty and proteid consistence. Proteid must be high, but fat is all important. As much cream must be incorporated with the milk as the child will digest. For poor people who cannot obtain cream add butter to the bottle of milk and shake well. Cod liver oil, fresh bone marrow or rich gravy from fatty meats may be incorporated with the milk. Beef juice, chicken broth, beef tea, or other animal broths, eggs, minced fresh meat sieved and pulped must be given when the suitable age is reached, but whatever the age of the child be the first and main indication is *animal food*.

2. Fresh air and baths. The child should be out daily in sunshine and fresh air. Lightly and loosely, but warmly clad. Freedom given to the thorax in respiration. A salt douche after the daily bath and good friction give tone to the muscular and vascular system and frequently check the sweating. Forbid hot rooms, and insist on open windows in nurseries.

3. Cod liver oil is a food, and an excellent means of giving fat. Lime water has no effect on the disease. By virtue of its alkalinity it is often added to milk to prevent firm clotting in the stomach and aid in gradual coagulation in small masses. Arsenic is sometimes of great use and may be combined with syrup of iodide of iron, or syrup of the lactophosphate of calcium and iron. Preparations of bone marrow may be given. Some authorities advocate the use of phosphorus in rickets and Concetti suggests a special preparation of phosphorated oil, in which the phosphorus is completely suspended. As accidental poisoning has occurred from the administration of phosphorated oil owing to the defective solution and precipitation of the drug his directions for its manufacture might with advantage be adopted. The complications must be treated on special lines; to cure the disease which underlies them use the above indications recollecting firstly and mainly animal food.

Fatality of Whooping Cough.—(*Pediatrics*, Feb., 1904.) Eliza H. Root, M.D., says that whooping-cough is a serious disease and exposure to it should be avoided as much as possible. It not only causes death, but often leaves serious physical, mental or nervous defects that remain with the victim for the remainder of life. Death often occurs. A study of the vital statistics issued by city health departments will lead to the consideration of whooping-cough as grave a disease as scarlet fever. In Chicago during the first six months of 1903 there were 150 deaths from whooping-cough, which was more than one-half as many as from scarlet fever for the same time. The State of Michigan, from June, 1903, reports 28 deaths from whooping-cough as against 10 from scarlet fever. Reports from Paris, France, show nearly the same proportion of fatalities. In Scotland the deaths registered in eight

principal towns for the week of May 16, 1903, give 4 from scarlet fever and 25 from whooping-cough.

Death from whooping-cough occurs most frequently from pneumonia as a complication that induces heart failure or a bronchitis may occur that ends in suffocation. Asphyxia or marasmus, due to the continued ejecting of the food or loss of appetite. Cerebral apoplexy, external hemorrhage and emphysema of the subcutaneous tissues after rupture of the larynx is occasionally given as the cause of death.

Whooping-cough should be under the control of the authorities subject to quarantine and other preventive measures as much as scarlet fever. Scarlet fever is not only contagious, but it is highly infectious. It can be conveyed from a scarlet fever patient to another individual by one not ill of the disease. It is "carried" about the neighborhood by careless members of the exposed family, by milk, dogs, cats, etc., and requires strict measures to prevent its spread. Whooping-cough, so far as is known, is not so "carried," but it is actively contagious from one person to another. Its control need not be as complicated and far-reaching as that of scarlet fever, but cases should be isolated and controlled by the local health authorities.

Tetanus and Vaccine Virus.—(*Pediatrics*, Feb., 1904.) John H. Huddleston says the 1901 epidemic of tetanus following vaccination brought out the facts that such cases are exceedingly rare, that these rare cases have followed the use of points and glycerinated virus indiscriminately, and that while conclusive demonstration is lacking that the tetanus bacillus has been in any case inoculated with the vaccine organism, the possibility of the combined infection certainly exists. To clear up this point he made experiments which gave the data from which he draws the following important conclusions:

1. The feces of calves fed on hay may contain tetanus germs.
2. Tetanus germs do not develop in glycerinated virus.
3. If any form of vaccine virus, either dry points or tubes of glycerinated virus, is infected with tetanus, it may convey it.
4. Small amounts of the tetanus infection easily fail of demonstration both by animal and cultural tests.
5. If tetanus germs are applied in quantity to the inoculated areas of a calf at any time during the period of vaccine production the tetanus may be present in the vaccine virus collected.
6. Inoculation by scarification is a possible method of inducing tetanus in susceptible animals.
7. It is probable that precaution against the issue of infected vaccine consists less in tests of the virus than in care taken during production, and especially in the cleanliness of the methods in use in stable and laboratory.

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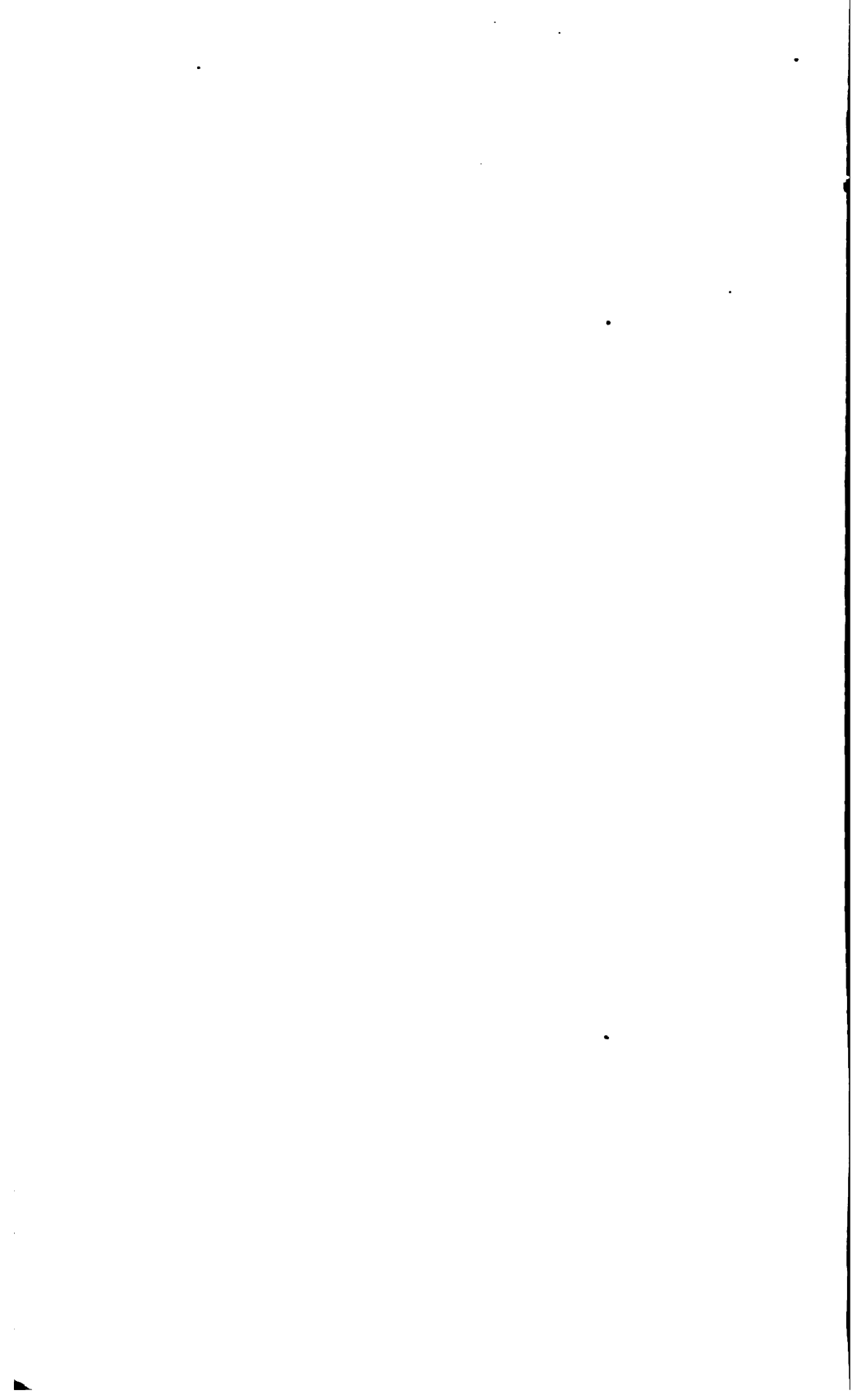
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